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OUR NATURAL RESOURCES: WHAT IS OUR WATER WORTH

1975-78 WATER QUALITY MANAGEMENT PLANNING PROGRAM,
NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS

North Central Texas Council of Governments

June 1976

236130

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Our Natural Resources

What Is Our Water Worth?

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What Is Our Water Worth? presents the adopted work plan for the North Central Texas Council of Governments in areawide water quality management planning pursuant to requirements of Section 208 of the Federal Water Pollution Control Act Amendments of 1972. It has been approved, with minor changes, by the Areawide Planning Advisory Committee to the NCTCOG, Texas Water Quality Board, Governor of Texas, and the U.S. Environmental Protection Agency, Region VI.

What Is Our Water Worth? describes the continuing planning process to date, the anticipated content of the annual plans, detailed NCTCOG staff work activities, each anticipated consultant contract, and the resources being devoted to the program. Integration of functional planning efforts at NCTCOG is being addressed primarily through the formulation and adoption of a Preferred Regional Development Policy.

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PRICES SUBJECT TO CHANGE

Our Natural Resources

What Is Our Water Worth?

1975-78 Water Quality Management Planning Program
North Central Texas Council of Governments

This document presents the adopted work plan for the North Central Texas Council of Governments in areawide water quality management planning pursuant to the requirements of Section 208 of the Federal Water Pollution Control Act Amendments of 1972. It has been approved, with minor changes, by the:

Areawide Planning Advisory Committee to the NCTCOG,
Texas Water Quality Board,
Honorable Dolph Briscoe, Governor of Texas, and the
U.S. Environmental Protection Agency, Region VI

A companion document, "Let's Talk Clean Water", presents the approved Annual Public Participation Program for Water Quality Management Planning 1976-77. Suggestions and comments on both documents are encouraged at all times. Simply note comments on the Response Sheets at the back of each report, detach, and return to: Herman J. Veselka, Director of Water Resources, North Central Texas Council of Governments, P.O. Drawer COG, Arlington, Texas 76011 or call (817)640-3300.

June 1976

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(A special thank-you is extended to Sallie Rawlings for her diligent efforts as the Public Information Specialist for this program through June, 1976.)

The preparation of this report was financed through a planning grant from the U.S. Environmental Protection Agency under provisions of Section 208 of the Federal Water Pollution Control Act Amendments of 1972, as amended.

What is NCTCOG?

The North Central Texas Council of Governments is a voluntary association of cities, counties, school and special purpose districts in the North Central Texas Region, organized to provide a forum for the discussion of areawide problems and to promote regional problem-solving through cooperative programs and comprehensive regional planning. NCTCOG, legally a political subdivision of the State of Texas, is not a government. It has no taxing or enforcement powers, and membership is voluntary. The Council of Governments is a cooperative effort in which local governments and involved citizen groups may pool their resources to meet challenges beyond their individual capabilities. By promoting intergovernmental coordination and cooperation and by carrying on regional planning programs, NCTCOG both complements and supplements the work of local governments and community groups which serve the public. The Council of Governments represents a determination on the part of its member governments to serve their citizens through the provision of more efficient, effective public services.

North Central Texas is a 16-county metropolitan region centered around Dallas and Fort Worth. It has a population of 2.8 million and an area of 12,627 square miles. NCTCOG has 163 member governments who support the Council's activities through their contributions. The membership currently includes 16 counties, 115 municipalities, 16 independent school districts, and 16 special purpose districts.

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I. The Continuing Planning Process

Continuing the Continuing Process...

The North Central Texas Council of Governments (NCTCOG) is a voluntary organization of cities, counties, school and special purpose districts in the sixteen-county North Central Texas region outlined in Figure I-1. NCTCOG was organized ten years ago to provide a forum for the discussion of areawide problems and to promote regional problem-solving through cooperative programs and comprehensive regional planning.

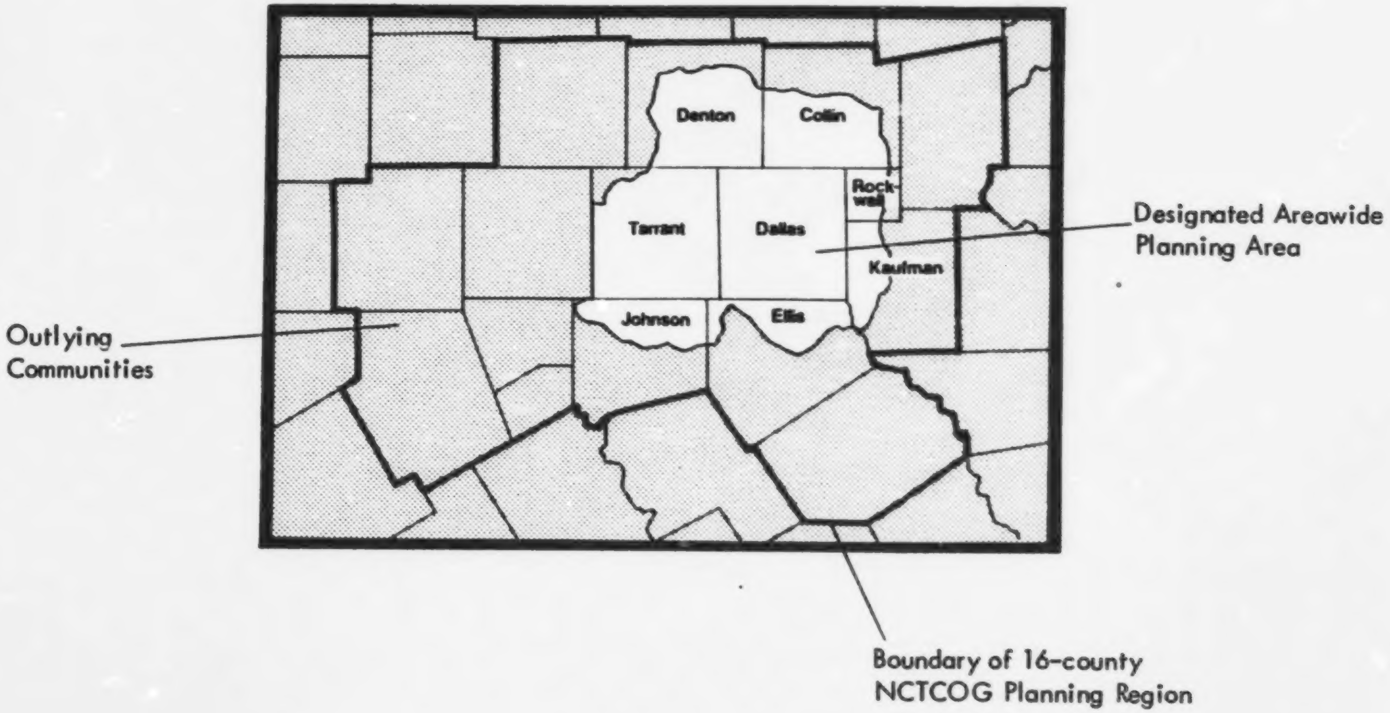
Among its many programs, NCTCOG has been designated in 1975 by the Governor of Texas and the U.S. Environmental Protection Agency (EPA) to undertake a major planning effort in water resources management for the portion of the region identified in Figure I-1 as the "designated areawide planning area." The Governor has identified this as an area which, as a result of urban-industrial concentrations or other factors, has substantial water quality control problems. The planning effort, required under Section 208 of the Federal Water Pollution Control Act Amendments of 1972, has the following objectives:

1. Development of a local planning process which can successfully conduct the required planning on an areawide scale;
2. Development of an initial plan meeting requirements of the Act; and
3. Establishment of a continuing planning process at the regional level which can successfully evaluate the current plan and appropriately update such a plan to allow continued annual recertification by the Governor as required by the Act.

Water resources planning is not new to the local governments and agencies in the Dallas-Fort Worth region or to NCTCOG. A continuing areawide planning process for improving and constructing wastewater treatment works has been underway in the region since the late 1960's. As a result, a substantial amount of the near-term planning effort for the metropolitan area insofar as these "point sources" of pollution (such as municipal wastewater treatment plants) has already been accomplished. A water quality management plan for the Upper Trinity River Basin within which the designated areawide planning area is located was developed by NCTCOG and approved by the State and EPA in the early 1970's. Dealing with point sources of pollution, this plan described a regional sewerage system which would serve substantially the whole of Dallas and Tarrant Counties, plus those portions of Denton, Collin, Rockwall, Kaufman, Ellis, Johnson and Parker Counties which might reasonably be expected to form parts of regional or subregional sewerage systems centered on the Dallas-Fort Worth metropolitan area.

FIGURE I-1

PLANNING AREAS FOR WATER RESOURCES


Denton
Collin
Rock wall
Tarrant
Dallas
Kaufman
Johnson
Ellis
Designated Areawide Planning Area
Outlying Communities
Boundary of 16-county NCTCOG Planning Region

This report examined alternative solutions and recommended a plan consisting of a combination of separate treatment plants and systems of interceptors carrying flows to these regional or subregional plants. The plan also included an Environmental Assessment and a Management and Finance Program to support the recommended alternatives. As discussed in the next chapter, more recent efforts at the basin, State, and local levels have also been conducted regarding treatment works. Thus, the planning in its present form represents a general consensus as to how the communities in North Central Texas can collectively solve their near-term sewage treatment problems. The existence of these plans demonstrate that these communities have been cognizant of their problems and are moving towards solutions. Construction is underway or soon to be started on the regional and subregional plants. Therefore, the emerging planning effort under Section 208 will build upon the the facilities planning that is already in existence.

However, there is no companion plan to the adopted and emerging "point source" facilities plans treating the subject of "nonpoint sources" of pollution in the Dallas-Fort Worth metropolitan area, or addressing how trade-offs among structural and nonstructural approaches might be made toward achieving or maintaining clean water. Section 208 of the Act provides local governments and agencies in the metropolitan Dallas-Fort Worth area with an opportunity and the needed financial resources to plan and manage such a comprehensive water quality improvement program.

With the recognition by local governments in the metropolitan area of the need to assess water quality alternatives beyond treatment plants, and their continued commitment to participate in the areawide planning process as indicated in officially-adopted resolutions of intent, NCTCOG received in June of 1975, a grant of $2.321 million from EPA to support development and operation of the continuing areawide waste treatment management planning process during the 1975-1978 period. In accepting these funds and passing these resolutions, the local governments and agencies of the region have pledged to work, through the preparation of an implementable plan, toward the goals of the Act. In doing so, control of the plan content remains in the hands of the local elected officials in the region. The two most significant national goals in the Act are:

1. That "wherever attainable" by 1983 water quality will have improved enough to allow the propagating of fish, and recreation in and on the waters. This has been referred to by many as the "swimmable/fishable" goal.

2. That by 1985, all discharge of pollution into navigable waters will have been eliminated.

Our Waters...

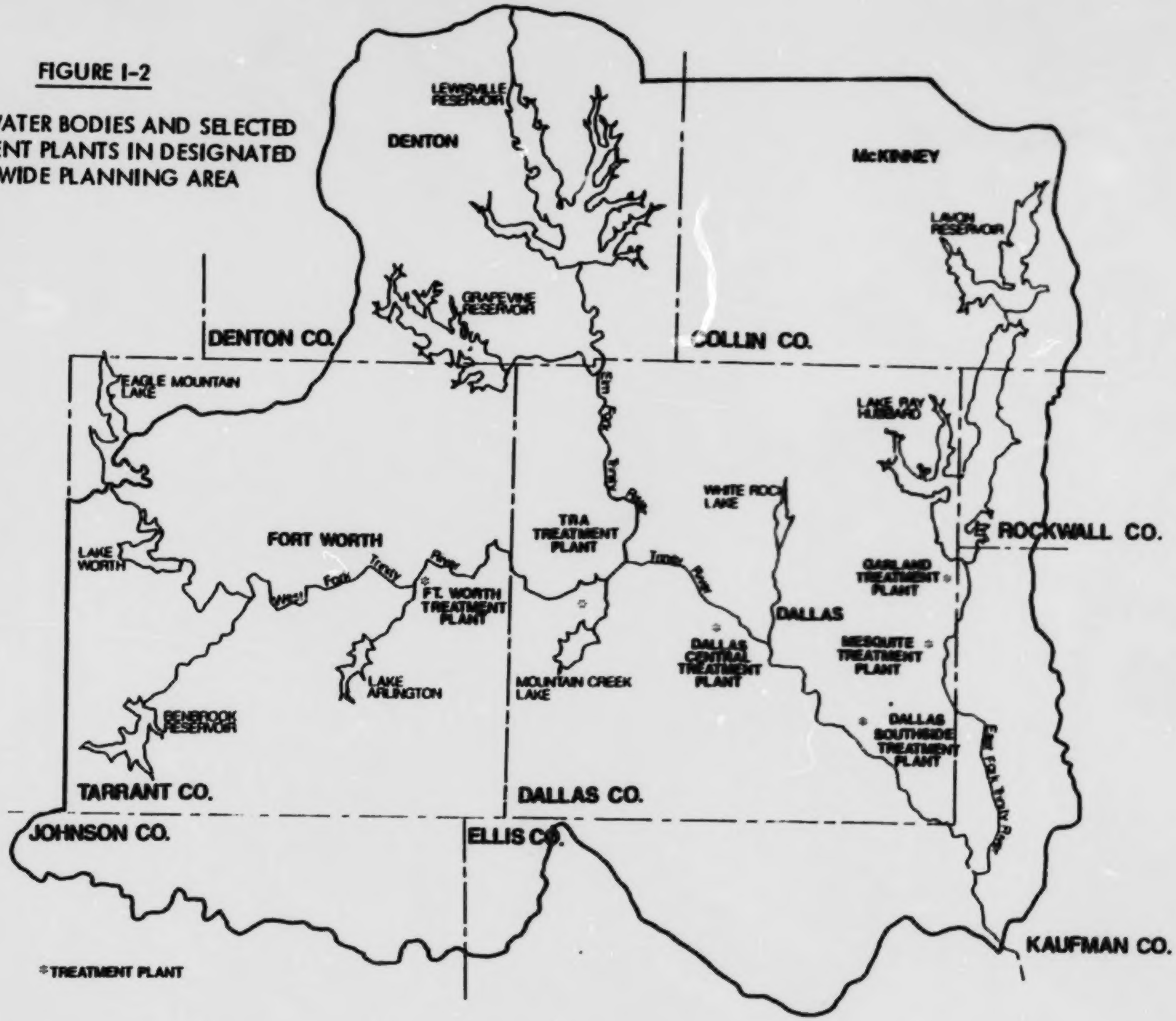
Even though the planning area was designated on the basis of substantial water quality control problems, it should be recognized that the current quality of the waters in the designated area ranges from very good to very bad, and that many water bodies currently support recreational activities and active fish populations. For example, the water quality in the manmade lakes of North Central Texas is consistently acceptable for their uses, mainly municipal water supplies and recreation, including fishing. There are other major uses of these reservoirs as well, including flood control, conservation, energy production and irrigation. However, certain occasional problems do appear in some lakes such as taste and odor problems, daily variations in dissolved oxygen levels and algal growth. Major lakes in the Dallas-Fort Worth area shown in Figure I-2 include Lake Ray Hubbard, Lake Lavon, White Rock Lake, Lake Lewisville, Lake Grapevine, Mountain Creek Lake, Lake Arlington, Benbrook Reservoir, and Lake Worth. There are other smaller lakes as well not shown.

Another example of relatively good quality waters are the Elm Fork below Lewisville Dam, and Denton Creek below Grapevine Dam. Both of these reaches of streams receive water released from the reservoirs to support their base flow and are therefore of consistently good quality with high dissolved oxygen levels usually near-saturation and only isolated, infrequent pollution problems. They are monitored closely by the agencies which are using them for water supplies and they are consistently suitable for such use. Thus, the activities of NCTCOG and the local governments and agencies under the continuing planning process regarding these lakes and stream reaches will be to maintain their good quality and to pinpoint and identify ways to eliminate the occasional problems.

This is sharply contrasted with the lower East and West Forks and the main stem of the Trinity River in Figure I-2 which have severe water quality problems ranking with the Houston Ship Channel as the worst in the entire State of Texas. A principle reason is that in dry weather the flow in these reaches is almost entirely made up of discharges from the wastewater treatment plants shown in Figure I-2. Thus the name "effluent dominated" streams. As the adopted water quality management plan continues to be implemented, the water quality is expected to improve considerably. Generally, however bad the quality is at this base flow, it is even worse in the first part of a rise produced by a rain following a period of low flow. Major events of this type following low flow periods of several months may result in depressed oxygen for several days and extend more than 250 miles downstream in the Trinity River all the way to Lake Livingston. The most extreme event on record, in April 1971, produced oxygen levels close to zero in the Trinity to Lake Livingston for about two weeks and resulted in a kill estimated conservatively at 200 tons of fish in the river just above the headwaters of Lake Livingston. Thus, much of the attention in the continuing planning process over the next few years will continue to be placed on improving the water quality conditions of these highly polluted stream reaches, with particular attention to nonstructural management/regulatory alternatives and innovated structural alternatives. Several innovative structural alternatives including wastewater effluent diversion, seasonal plant operations, and in-stream oxygen aeration for improving dissolved oxygen levels were discussed in the 1974 basin plan.

FIGURE I-2

MAJOR WATER BODIES AND SELECTED TREATMENT PLANTS IN DESIGNATED AREAWIDE PLANNING AREA


DENTON
LEWISVILLE RESERVOIR
GRAPEVINE RESERVOIR
DENTON CO.
McKINNEY
LAVON RESERVOIR
COLLIN CO.
EAGLE MOUNTAIN LAKE
LAKE RAY HUBBARD
ROCKWALL CO.
Elm Fork Trinity River
WHITE ROCK LAKE
TRA TREATMENT PLANT
FORT WORTH
LAKE WORTH
West Fork Trinity River
FT. WORTH TREATMENT PLANT
Trinity River
GARLAND TREATMENT PLANT
DALLAS
MESQUITE TREATMENT PLANT
DALLAS CENTRAL TREATMENT PLANT
MOUNTAIN CREEK LAKE
LAKE ARLINGTON
BENBROOK RESERVOIR
DALLAS SOUTHSIDE TREATMENT PLANT
East Fork Trinity River
TARRANT CO.
DALLAS CO.
JOHNSON CO.
ELLIS CO.
KAUFMAN CO.
*TREATMENT PLANT

In between these extremes are the numerous small streams in urban areas which are either "intermittent" meaning that they flow only when it rains, or have a very small base flow in dry weather. Streams in this category include the Clear Fork below Benbrook Dam, the West Fork below Lake Worth Dam, and a large number of small urban streams in the designated area. Although some of these streams have relatively poor quality at base flow, as well as the leading edge of a rise, certain fairly sensitive fish such as shad and sunfish are often seen in numbers. Certain chemical, aesthetic and/or biological problems exist, but usually do not prevent recreational and other uses, which are sometimes quite intensive in park areas along such streams.

Fifth and finally, there are many intermittent streams throughout the area which are affected entirely by runoff-related "nonpoint" sources of pollution. This usually results in turbid but otherwise good quality water following a rain, decreasing turbidity as the runoff decreases, standing pools which may remain clean or slowly stagnate after the flow ceases, and finally a dry channel. All rural streams and watercourses not included in another category above are in this category. Although these types of streams are of interest in the continuing areawide planning process, they will receive less priority attention than the extreme cases.

Interrelating Natural Resources...

Just as the goal of "swimmable/fishable" waters by 1983 is not the only national goal in regards to natural resources, the areawide water quality management planning program is not the only natural resources planning program of NCTCOG. Since its establishment ten years ago, NCTCOG has devoted a major portion of its efforts and funds to environmental programs. Maintaining a quality environment is a challenge which NCTCOG is meeting through a number of specific programs.

Brief descriptions of some of NCTCOG's environmental programs besides water quality management planning follow. In addition to these, NCTCOG reviews the environmental impacts of federally funded development projects through its government application review process.

Water Supply Management - In 1974 NCTCOG completed a regional water supply plan for the sixteen-county North Central Texas region. The study was requested and financed by the Cities of Dallas, Fort Worth, and Denton, and the Tarrant County Water Control and Improvement District #1, the North Texas Municipal Water District, and the Trinity River Authority of Texas. The study was coordinated by the Regional Water Supply Planning Committee of NCTCOG. The plan includes a comprehensive evaluation of the probable future water demands to year 2050 in the sixteen-county region served by NCTCOG and an overall time-phased plan of facility and reservoir development for meeting the projected needs through the year 2000.

The study provides the type of regional planning which will serve as a prerequisite to future Federal participation in water related projects, and serves as a guide to NCTCOG and various Federal and State agencies in their decisions relative to water resources grant-in-aid programs. This plan and its continuing refinements will be used in the water quality management planning program to test regional development impacts of the proposed time-phased system, assess opportunities for wastewater recycling and water conservation, determine potential impacts of nonpoint and point sources of pollution, and for other portions of the work.

Flood Plain Management - The USGS has produced 100 year flood prone area maps of certain parts of the region at a scale of 1" = 2000' which correspond to their topographic maps, including most of the designated areawide planning area. Copies of those that have been completed are available from NCTCOG and will be used as appropriate in the water quality management planning program. The Federal Insurance Administration has adopted the 100 year flood plains for identification of special flood hazard areas in administering national flood insurance and disaster protection. NCTCOG has published in its Model Code for Community Development series a model flood plain regulation for use by local governments.

Solid Waste Management - In 1974 NCTCOG adopted a strategy for solid waste management as the result of a multi-year study financed by the U.S. Environmental Protection Agency. At the outset of the study, the participants adopted the philosophy that the study product should not be a single fixed course of action or program. Rather, the goal was to develop techniques and guidelines which local entities can use to evaluate their problems and to determine, with the considerations of local and regional implications, the most appropriate course of action. The plan must, of course, have a single common goal--effective and coordinated solid waste management at minimum total community cost.

In accord with the philosophy, the study product consists of an analytical technique for evaluating alternative solutions, a regional least-cost configuration of facilities and users which serves as a basis for comparing alternatives, and a series of general policy guidelines for solid waste management which offset the general philosophy. The NCTCOG is providing continued leadership in regional solid waste management planning as recommended in the study, and the staff is assisting several subregional implementation efforts and utilizing the analytical techniques developed during the study. These techniques and data from the study will be used in the water quality management planning program.

Air Quality Management - Beginning in 1967, NCTCOG undertook a program to identify air quality problems and recommended solutions. NCTCOG's citizens committee for the study of air pollution developed a recommended model ordinance, the first in the State of Texas, for adoption by cities throughout the region. This model was published and disseminated to member governments, and since that time, many of the cities in North Central Texas have adopted the model or a locally-tailored version.

During 1974, the air quality emission impacts of alternative areawide transportation plans for 1990 were assessed using a computer-based submodel of the Urban Growth Simulation Model. The alternative recommended by NCTCOG in the 1990 Total Transportation Plan is a mix of highway and transit which, among other characteristics, emits the lowest total air pollution of all alternatives tested. The analysis techniques will be utilized in the water quality management planning program to identify the so called "secondary" air quality impacts of future development patterns. The "primary" air quality impacts of alternative systems and strategies will be assessed as well in the water quality management planning program. NCTCOG continues to explore opportunities for areawide air quality management planning.

Open Space Management - In 1973 an open space policy plan for North Central Texas was developed by NCTCOG which sets forth objectives and policies to guide planning for and providing of open space and outdoor recreational facilities. A follow-up manual was published in 1975 which details a process for identifying critical natural areas in the North Central Texas region. The terminology of open space is discussed along with the relationship between critical areas and intensive and passive recreation. The natural features, important in the identification process, are described and a general discussion of implementation methods is included. The importance of the water cycle as the "focal point" of most natural processes, life support systems, and outdoor recreation is emphasized in the open space planning program, and the past and ongoing open space work is of direct benefit to the continuing areawide water quality management planning program. One example is the natural features data bank under preparation.

Energy Resources Management - As part of the natural resources impact assessments of alternative transportation plans, a submodel of the Urban Growth Simulation Model was used during 1974 to estimate the energy consumption (including both gasoline and electrical energy) in BTU's for each alternative. Of interest is that the all-transit transportation alternative would consume more total energy than an alternative which mixed highway and transit.

During 1975, contingency plans in case of another gasoline shortage were developed by NCTCOG. During 1976 NCTCOG will assist the University of Texas at Arlington in conducting an energy resources seminar. All of this work is directly applicable to to the areawide water quality management planning program, and will be supplemented with tools and data from this program.

Noise Control Management - Using data from the Federal Aviation Agency, NCTCOG has produced a noise contour map delineating anticipated noise levels around the new Dallas/Fort Worth Regional Airport. This map, disseminated through the affected cities, serves as a guide to land use and development adjacent to the airport. Appended to the map is an explanation of noise zones and recommended land uses in each. Data is also available from Air Installation Compatible Use Zone (AICUZ) studies at selected Air Force bases in the region.

Special Studies - In addition to the continuing natural resources programs above, NCTCOG has conducted several special studies of importance. Under the direction of a special Renner Area Planning Committee, NCTCOG and its consultant prepared an Environmental, Water and Wastewater Plan for the Renner area and portions of the White Rock Watershed in 1973. This study addresses flood runoff, sedimentation, and pollution from storm water runoff as well as water and wastewater facility needs. Under a grant from the Farmers Home Administration of the USDA, NCTCOG in 1975 published four rural water and wastewater plans to ensure provision of adequate and safe water supply and waste treatment to Collin, Denton, Ellis, and Johnson Counties. All of the above plans are useful in the continuing planning process.

Separation of these "functional" programs should not mask the interrelationship of functions or the presence of several functional processes on a single location which is characteristic of natural systems. A forest may at the same time: harbor vital biotic life processes; retard erosion; promote percolation of groundwater into acquifers; absorb noise; collect dust from and cool air; produce lumber; restrict structural development in an airport clear zone, flood plain or area of geologic hazard or unstable soils; separate conflicting land uses or direct and compact adjacent urban development while increasing the value of the nearby lands; provide natural beauty; provide for land-extensive recreation; and include significant historic, archeological or cultural sites.

The areawide planning process provides the opportunity, and indeed the legislative mandate, to integrate the process with other ongoing or needed environmental programs. Many mechanisms are identified in this document to accomplish this. Common planning standards throughout NCTCOG programs and an interdepartment natural features data bank are being developed. Tools for assessing the areawide air quality, water quality and quantity, energy, and residual impacts of alternatives will be prepared and utilized extensively. The Impact Assessment will be the basic annual water quality management plan containing several alternative water resources management strategies. Representatives with experience and responsibilities in other natural resources programs will be involved in the planning process as part of the public participation program. Monies from the Section 208 EPA grant are being combined with funds from the U.S. Department of Housing and Urban Development, U.S. Department of Transportation and other NCTCOG funding sources to perform certain interfunctional activities. Through these and other efforts it is intended that the areawide water quality management planning program be the foundation from which a truly integrated natural resources planning program will emerge.

Planning for Regional Development...

The North Central Texas Council of Governments has recently undertaken a major step to improve coordination of its physical planning programs as well. A new Department of Management and Planning Coordination has been created which will support functional planning efforts to assist each physical planning department if working toward a common goal - the sound and orderly development of the region. The new plan is more than just an "in-house" readjustment. It is a pioneering effort - one of the first of its kind in the country - to help guide the entire regional planning process.

NCTCOG's planning programs such as Transportation, Housing, and Natural Resources (including Water Quality) have been undertaken to help cities and counties which are looking for ways to provide services in an economical and efficient manner. Each of the plans has been directed toward problem solving in a specific area, but the new department will bring them closer together.

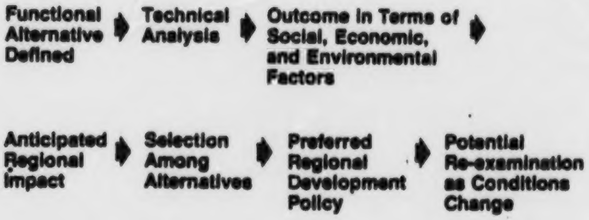
Whereas, initially, individual plans were developed to show that regional planning could be effectively carried out, the more difficult problem of helping policy-makers examine the interfunctional impact of policy decisions can now be addressed. The Management and Planning Coordination program involves working from a common data base, sharing staff resources and responsibilities among departments, providing increased opportunities for day-to-day input by local officials and using a standardized approach to the planning process.

The technique to be used in planning coordination is based on the testing of policy alternatives. Local government officials will define a group of major policy alternatives which they desire to examine. These alternatives would be statements of actions to be taken by local governments to solve problems of water supply, water quality, housing, land use, transportation, etc.

The policy-maker then will receive staff and consultant support from NCTCOG to test each alternative through a technical process involving extensive data collection and analysis. This process will project the outcome of each alternative in terms of social, economic, and environmental factors. For example, a regional sewerage system alternative will be evaluated not only in terms of facilities cost and engineering feasibility, but also in terms of where it would influence development to occur and the resulting distribution of population and employment centers.

The next step involves grouping sets of outcomes into anticipated regional impacts expected to result from the selection of one of the alternatives from each functional group. At this step, the anticipated impacts of both a sewerage system alternative and a transportation alternative would be laid side-by-side to determine if they are mutually supportive in their effects on regional development. Having been given a "preview" of anticipated results, it then becomes the responsibility of the local elected officials as policy-makers to select the preferred set of alternatives for local government implementation.

The alternative testing technique is illustrated in the diagram below:


Functional Alternative Defined
Technical Analysis
Outcome in Terms of Social, Economic, and Environmental Factors
Anticipated Regional Impact
Selection Among Alternatives
Preferred Regional Development Policy
Potential Re-examination as Conditions Change

This approach to the planning process offers several attractive features:

- It leaves both the selection of the alternatives to be tested and the determination of the preferred alternative in the hands of the local elected officials.
- It provides for the integration of functional planning by recognizing that alternatives selected within one functional area (e.g., transportation) will have impact upon the alternatives available in other areas (e.g., water quality).
- It recognizes that in a growing region such as North Central Texas, no plan can be viewed as permanent. Rather, guiding the sound development of such a dynamic region requires a planning process which (1) can be updated as new information becomes available, (2) can be expanded to include new functional planning responsibilities, and (3) most importantly - can project the future consequences of today's policy decisions.

Integration of functional planning efforts at NCTCOG will be addressed primarily through the formulation and adoption of a Preferred Regional Development Policy (PRDP). This approach was endorsed by the NCTCOG Executive Board at its September Retreat.

In the process of developing a PRDP, the technical committees will analyze the effects of decisions made in functional areas -- such as transportation or water resources -- on the future development of the North Central Texas region. This will assist local elected officials in making functional policy decisions which are technically consistent with respect to subregional development and deliberate in their predicted effect on the region as a whole.

This approach to Regional Development Planning is based on the theory that the timing, location, and scale of the physical and service infrastructure provided by public funds can be guided by local elected officials to influence private and public investment toward the preferred pattern of development. Sophisticated technology such as the Urban Growth Simulation Model, its submodels, and water quality models will be used to simulate the impact of various regional development policy alternatives on key parameters, such as water quality, air pollution, energy consumption, accessibility to place of work, etc. The expected consequences of each policy alternative will be presented to local elected officials to assist them in adopting one alternative as policy.

The goal of establishing a PRDP is to be addressed in the following steps over a period of several years:

- Develop and test alternative transportation plans. This was accomplished during 1974 and a 1990 Total Transportation Plan has been adopted.

- Using the 1990 transportation plan as an assumption/constraint, develop and test waste treatment/sewer and water supply system alternatives, and alternative areawide water resources management strategies. This process is described in detail as Element 400 of the NCTCOG staff work program in the third chapter and will result in the 1978 Impact Assessment and selection of the preferred water quality management implementation program during the "initial" Section 208 planning period.

- Using the 1990 transportation plan and the waste treatment/sewer and water supply system alternatives identified above, develop and test land use and housing policy alternatives. It is expected that this process can begin near the conclusion of the "initial" Section 208 planning period.

- Reevaluate all policies plans related to transportation, water quality, water supply, housing and land use for technical consistency in subregional development and collective impact on the region as a whole. This process is not part of the "initial" Section 208 planning period but will be conducted under the areawide water quality management planning process and incorporated into subsequent annual plans.

The Participants and Their Roles...

Section 208 offers perhaps the best opportunity for public involvement ever written into Federal law. As stated in the Act, from its earliest stages, Section 208 opens up the planning process to public scrutiny, comment and active participation. Utilizing this opportunity to its fullest advantage will take a great deal of staff effort. But the idea of public knowledge and understanding during the entire process is essential to formulation of a plan that will be generally acceptable and implementable. It is particularly important that local officials be involved in the planning process, since implementation ultimately rests with them.

The Management and Finance Program of the NCTCOG Upper Trinity River Basin Comprehensive Sewerage Plan was prepared in 1971 to assist the NCTCOG policy committee in developing an implementation strategy for the plan. From this effort has emerged an organizational structure using a four layer concept. The four include: (a) Federal and State Level Responsibilities; (b) Regional Level Responsibilities; (c) Joint System Level Responsibilities; and (d) Local Level Responsibilities.

The Management and Finance Program interpreted the specific duties and responsibilities of each level of organization. Some of the responsibilities which are relevant to the continuing planning process are highlighted below:

(a) Federal and State Level Responsibilities. The duties of Federal and State agencies as they relate to NCTCOG were interpreted in the Management and Finance Program to include furnishing water quality standards and evaluation criteria, providing technical assistance, and acting with local governments and joint system operators to enforce the standards. The final EPA regulations for Section 208 planning reflect the primary role of the states in coordinating planning on a statewide basis, and describe the general requirements for coordinating integration and communication between state and local governments. The annual plan must be submitted to the Governor and his designates for certification prior to submission to EPA.

(b) Regional Level Responsibilities. The role of NCTCOG is clearly specified in Section 208 of PL 92-500 and its implementing regulations by EPA. There must be a continuing planning process and an annual plan for the designated areawide planning area. The NCTCOG Executive Board has responsibility for approving the annual plan on behalf of NCTCOG. Overall guidance and direction to the annual planning process is provided by the Areawide Planning Advisory Committee (APAC), which was appointed in December of 1975 by the Governor's Division of Planning Coordination and includes Federal, State, system operators, local government and citizen representatives.

(c) Joint System Level Responsibilities. Within the metropolitan portion of the Upper Trinity River Basin Comprehensive Sewerage Plan, which does not include the northern portion of the Section 208 planning area, there are four major operating entities for six joint system treatment facilities as recommended in the plan as amended in 1973. Functions of these system operators include finance, planning, operations, maintenance and monitoring plants and interceptors.

In addition, as recommended in the Management and Finance Plan, each joint system operator has formed a System Customer Council to serve as an advisory board. Participation of a customer city is voluntary. These customer councils have representation on the NCTCOG Water Quality Council and on APAC also.

(d) Local Level Responsibilities. The role of local governments under the Section 208 planning process extends beyond the construction of local collection systems or the billing of local sewer services. The annual plan will be submitted to local governing bodies for their review and recommendations. An extensive public participation program, mandated by the Act, has been instituted to ensure the active involvement of local elected officials during the continuing planning process.

Perhaps a fifth "level" could be added encompassing the interested and affected private organizations and individuals whose participation is being solicited and encouraged as part of the public participation program.

II. The Annual Plan

The Current Plans...

Areawide water quality management planning has been conducted on a continuing basis in North Central Texas since the late 1960's. As a result, there are several documents which make up the official water quality management "plan" for the Upper Trinity River Basin, within which the Dallas/Fort Worth designated areawide planning area is located. The first of these was developed by NCTCOG and its consultants under Federal funding and approved by the NCTCOG in the early 1970's. It was the first regional plan in the nation approved by the U.S. Environmental Protection Agency under the former 18 CFR regulations of the old Federal Water Act, and was used by EPA as a model for such planning across the country. The plan was also certified by the Texas Water Quality Board and the Governor of Texas.

The plan, entitled Upper Trinity River Basin Comprehensive Sewerage Plan, includes:

Volume 1 - (Engineering) Report, completed July, 1970, and approved by NCTCOG in August, 1971, as amended for the East Fork in May, 1973;

Volume 2 - (Engineering Report) Appendix, completed July, 1970;

Volume 3 - Management and Finance Program, approved December, 1971. A summary of the program was also prepared;

Volume 4 - Environmental Assessment, May, 1972;

as well as another document entitled "Upper Trinity River Basin Water Quality Monitoring Plan."

The facilities program portion of the plan in Volume 1 consists of two components:

1. a metropolitan system centralized primarily in the Dallas/Fort Worth area; and
2. a regional system for outlying communities in the Upper Trinity River Basin with independent systems.

Implementation of the facilities program is by stages:

1. Initial (by 1975);
2. Future Stage I (by 1990); and
3. Future Stage II (by 2020).

In 1973, as a result of requirements of Section 303(e) of the Federal Water Pollution Control Act Amendments of 1972 (PL 92-500), responsibility for development of basin plans throughout the State of Texas was placed on the appropriate river basin agency. In our area this is the Trinity River Authority (TRA). NCTCOG still retained certain planning responsibilities for the 16-county North Central Texas region, and many NCTCOG committee members participated on the basin-wide advisory committee.

In 1974, the TRA published The Water Quality Management Plan for the Trinity River Basin. The TRA also published supplementary volumes as part of the so-called "3c" plan.

The Texas Water Quality Board (TWQB) largely pursuant to requirements of PL 92-500, has also promulgated several documents which have standing in official water quality management actions in the area. These have been reviewed and approved by EPA when necessary. They are:

1. waste load allocation, for most of the official TWQB-identified water body segments in the area;

2. State management plans, annually; and

3. Texas Water Quality Standards, for the official TWQB segments in the area.

In addition, facility plans pursuant to Section 201 of PL 92-500 have been produced during the last three years by numerous municipalities, districts, and other entities in the area, in cooperation with the TWQB and EPA. These plans have been the first step in a three-step process for obtaining 75% Federal grants towards the cost of constructing waste treatment works. The steps include:

Step 1 - Facilities planning and related elements.

Step 2 - Preparation of construction drawings and specifications.

Step 3 - Fabrication and building of a treatment works.

Requirements for Annual Plans...

As noted in the previous chapter, the final regulations published by the U.S. Environmental Protection Agency in November, 1975,[1] establishes substantial new requirements for the

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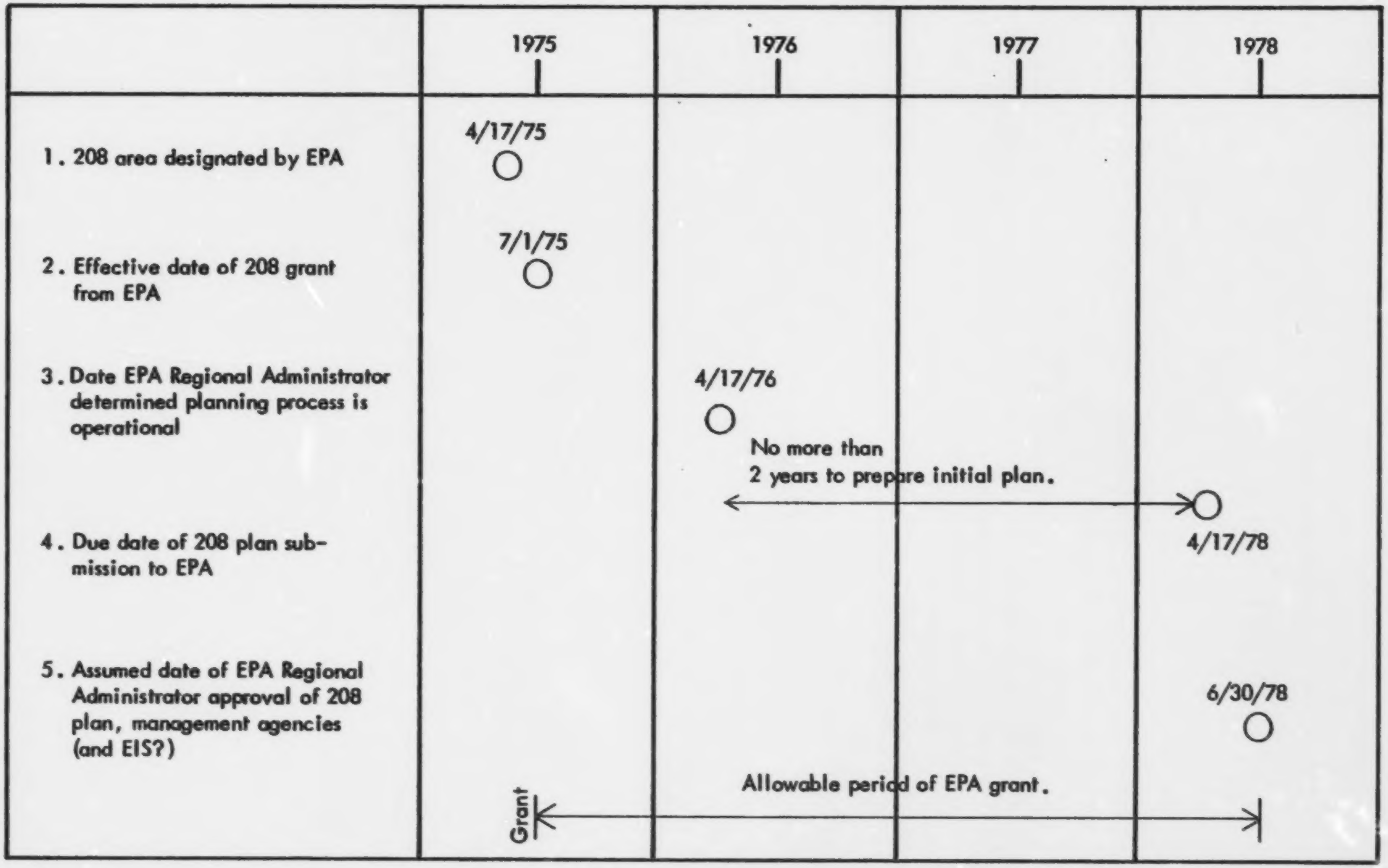
[1] "Policies and Procedures for the Continuing Planning Process" (40 CFR Part 130) and "Preparation of Water Quality Management Plans" (40 CFR Part 131), November 28, 1975, Federal Register.

FIGURE II-1
EXAMPLE OF THE EFFECT OF EPA REGULATIONS



water quality management planning process and now require the preparation of annual water quality management plans after an initial planning period. These regulations also have been specifically designed to incorporate Section 208 requirements for both State and designated areawide planning agencies such as NCTCOG into a single set of regulations that describes the policies and procedures for such planning and consolidates the requirements of Section 208 planning and Section 303(e) planning.

First, the regulations establish the timing for the preparation of areawide water quality management plans. This schedule for the Dallas/Fort Worth designated areawide planning area is shown in Figure II-1. With approval of the planning process on April 17, 1976, the "initial" annual plan meeting all of the planning requirements in the regulations and the Act must be submitted through the State of Texas to the EPA Region VI Administrator by April 17, 1978. The plan would then be updated annually. As indicated in the next sections, NCTCOG intends to prepare annual plans during both the 1976-77 and 1977-78 planning periods as well as annually thereafter.

Also of importance is that the regulations require that the annual plan produced during the continuing planning process satisfy most of the Step 1 facilities planning requirements for facilities for which Step 2 or Step 3 grant assistance is expected during the five-year period following annual plan approval. The regulations require that Step 1 facilities planning be coordinated with and be made part of the areawide continuing planning process. Figure II-2 has been prepared by NCTCOG to illustrate how this will be attained.

Step 1 facilities planning within the Dallas/Fort Worth designated areawide planning area has been divided into three groupings as indicated by column headings in Figure II-2. These are:

1. Completed. Step 1 plans which have been reviewed under the OMB Circular A-95 by NCTCOG and have received State and EPA approval for Step 2 or 3 grants. These completed studies will be evaluated by the consultant engaged by NCTCOG under Contract D, Point Source Analysis, discussed in the next chapter.

2. Ongoing. Step 1 projects on the State Municipal Facilities Priority List of July, 1975 or started previously. NCTCOG has prepared a list of the Step 1 facilities planning ongoing during 1974-1975, and expected to be ongoing during 1975-1976. Close coordination between these efforts and Section 208 planning will be required.

3. New. Facilities planning for which a Step 1 grant is not included on the priority list or on previous lists. As provided for in a program guidance memorandum from EPA, Section 208 planning will include responsibility for undertaking a significant portion of the facilities planning in the future. Figure II-2 indicates those requirements the Section 208 planning would and would not address. It is envisioned that Step 1 grants would continue to be provided to local governments and agencies for those certain detailed tasks identified in Figure II-2.

FIGURE II-2

RELATIONSHIP OF STEP 1 FACILITIES PLANNING TO AREAWIDE PLANNING

Location of Step 1 area (see map)	NEW (Step 1 grant not on State Municipal Facilities Priority List of July, 1975 or previously)	ONGOING (Step 1 grant on State Municipal Facilities Priority List of July, 1975 or started previously)	COMPLETED (Step 1 plans have been reviewed under A-95 and have received TWQB and EPA approval)
Within designated areawide planning area	Pursuant to EPA Program Guidance Memorandum AM-1, 208 planning will include responsibility for the following requirements in Section 35.917-1 of Title II regulations: 1. Description of the planning area. 2. Selection of service areas. 3. Selection of overall treatment systems, including location, capacity and configuration of all facilities, treatment levels, and preliminary identification of type of treatment and method of disposal of residual wastes. 4. Analysis supporting the selections in 2 and 3 based on identification, evaluation and cost-effective comparison of alternatives. Also, 208 planning will include an environmental assessment of direct regional impacts including energy, air quality, and sludge, and secondary impacts; and a common data base. Step 1 grants would be allowable for the following items, based on a "Plan of Study" prepared jointly by the applicant and NCTCOG, and submitted to NCTCOG for review and comment under A-95: Preliminary designs and studies related to the selected wastewater treatment systems, including sewer evaluation surveys, infiltration/inflow study, detailed surface and subsurface investigations of sites for proposed facilities, preliminary designs and detailed cost-effectiveness studies of individual proposed facilities, site-specific environmental assessment, or other requirements set forth in Section 35.917-1 of the Title II regulations.	List of on-going studies to be prepared by NCTCOG staff and incorporated into Unified Work Program. Conference will be held with each agency performing Step 1 planning to identify topics where 208 planning is expected to assist, and to agree upon methods of coordination including use of common data base. Where necessary, on-going studies would be further evaluated by consultant engaged by NCTCOG in first phase "point source" contract.	Completed studies will be evaluated by consultant engaged by NCTCOG in first phase "point source" contract for applicability in 208 planning.
Within outlying communities in 16-county region	Step 1 grants to cover all Section 35.917-1 requirements except where applicant requests NCTCOG assistance. The "Plan of Study" would be prepared by the applicant and submitted with the Step 1 grant application to NCTCOG under A-95 review as currently occurs.	List of on-going studies to be prepared by NCTCOG and incorporated into Unified Work Program. Only in selected cases will conferences be held with agencies.	No action contemplated.

Next, for Step 1 facilities planning conducted within the 16-county NCTCOG planning area but outside the Dallas/Fort Worth designated areawide planning area, NCTCOG would continue its responsibilities as the designated A-95 clearinghouse to review and comment on such projects. As provided in the Federal water quality management planning regulations, the State of Texas will prepare plans for the non-designated portions of the state which includes the portions of the 16-county NCTCOG area outside the designated area. The timing for development and content of these State-prepared plans is to be established by agreement between the State and EPA, but the completed plans must be submitted to EPA for approval no later than November 1, 1978.

Finally, the regulations establish the substantive planning requirements which the annual water quality management plans must address. These are discussed in the following sections of this chapter.

The Anticipated 1977 Annual Plan...

Although the Federal regulations do not specifically require the preparation of a plan during the 1976-77 planning period, it is the intent of NCTCOG to prepare a 1977 Annual Plan. The reasons are severalfold. First, it is believed that the 1977 Annual Plan will assure continued funding and discharge permits by the State and EPA for local wastewater projects and will logically continue the initial work of the early 1970's by NCTCOG and the Trinity River Authority. Next, the regulations do require the preparation of several "interim outputs" during 1977 including population and land use data, sewage flows and loads, service areas, and others. Some of these "interim outputs" will be part of the 1977 Annual Plan.

Next, several topics of particular interest will be incorporated into the plan, including evaluation of the municipal and industrial treatment works in meeting 1977 and 1983 Federal and State effluent limitations, and an assessment of the areawide cost, air quality, energy, and residual impacts of the ongoing program. Finally, the submission of an initial annual plan through the complex review and approval process to EPA certification as established by Section 208 will involve the affected local governments, agencies and the public in the planning process early, and will provide a meaningful test of this approval process prior to submission of the full plan during 1978.

During the 1976-77 annual cycle of the areawide continuing planning process, certain products will be prepared for review and consideration by the Areawide Planning Advisory Committee (APAC), while others will be prepared as part of the 1977 Annual Plan for approval by APAC and NCTCOG Executive Board and submission through subsequent steps to the EPA Regional Administration for certification as the official (and incidently sole) areawide water quality management plan for the Dallas/Fort Worth designated planning area.

The public participation program design which is prepared in Activity 115 of the next chapter identifies the type of review and distribution anticipated for each product prepared during the planning process.

As presently envisioned, the actual 1977 Annual Plan will consist of a series of documents which update the facilities planning and impact assessment portions of the NCTCOG Upper Trinity River Basin Comprehensive Sewerage Plan of the early 1970's. This 1977 Annual Plan will be submitted through the entire review and approval process to the EPA Regional Administrator for certification as illustrated in Figure IV-1 of the next chapter. The 1977 Annual Plan will include the following:

1. Summary of 1977 Annual Plan, briefly describing the major conclusions, recommendations, and anticipated impacts of the facilities program and impact assessment. This concise document will be prepared by the NCTCOG staff with the assistance of the consultants performing Contracts D and F.

2. 1977 Facilities Program, including the recommended program of treatment works and conveyance systems, based on an update of the adopted 1970 plan as amended, the 1974 basin plan, results of ongoing and completed Step 1 facilities planning, and evaluating the ability and impacts of the current facilities program in achieving the pretreatment requirements of industry and effluent limitations for publicly owned and nonpublicly owned treatment works specified in the Act and summarized in the first four columns of Figure II-3. This program will be prepared by the consultants under Contract D, Point Source Analysis, with the assistance of the NCTCOG staff in Activity 410 as described in the next chapter.

3. 1977 Impact Baseline, assessing the areawide cost, air quality, energy, and residual impacts of the program, as well as water quality and related secondary impacts. Although the 1977 Impact Baseline will not assess long-range alternative treatment works and conveyance systems as will the 1978 Impact Assessment, the primary and secondary impacts of the facilities program will be analyzed by the NCTCOG staff in Activity 410 and the consultant performing Contract F, Impact Assessment, using data provided by the consultant under Contract D, and from other functional programs of NCTCOG. The document will be prepared by the consultant performing Contract F.

4. Description of the Planning Process (1976-77), summarizing the planning process to date and participation by all parties as provided in Element 100, Unified Planning Program, of the next chapter. It will also include the "Summary of Public Participation" required by EPA regulations 40 CFR 105, and an initial evaluation of the public participation program. It will be prepared by the NCTCOG staff in Activity 125.

Initial drafts of the 1977 Annual Plan documents will be presented to the Areawide Planning Advisory Committee in late 1976, and will be submitted through the formal review and approval steps.

FIGURE II-3

REQUIREMENTS OF THE ACT TO BE ADDRESSED DURING THE 1976-77 AND 1977-78 ANNUAL PLANNING CYCLES

PERTAINING TO	DURING 1976 ANNUAL CYCLE				DURING 1977 ANNUAL CYCLE	
	PRETREATMENT REQUIREMENTS		EFFLUENT LIMITATIONS		NATIONAL GOALS	
	FROM EXISTING INDUSTRY	FROM NEW SOURCE INDUSTRY	"1977"	"1983"	SWIMMABLE/FISHABLE (1983)	ZERO DISCHARGE (1985)
Publicly Owned Treatment Works (POTW) .	Requirements for Compatible Pollutants (1) Requirements for Incompatible Pollutants (2)	Requirements for New Source Industrial Discharges (2)	Secondary Treatment for Plants in Existence July, 1977, or Approved Prior to June 30, 1974; or any more Stringent Effluent Limitations (3)	Best Practicable Waste Treatment Technology (BPWTT) for all POTW's and for New Plants Funded after June 30, 1974 (4)	Not Applicable	It is the National Goal that the Discharge of Pollutants into the Navigable Waters be Eliminated by 1985 (5)
Nonpublicly Owned Treatment Works	Not Applicable	Not Applicable	Best Practicable Technology Currently Available (BPT) (2)	Best Available Technology Economically Achievable (BAT) (2)	Not Applicable	
Water Resources Quality	Not Applicable	Not Applicable	Not Applicable	Not Applicable	It is the National Goal that Wherever Attainable, an Interim Goal of Water Quality Which Provides for the Protection and Propagation of Fish, Shellfish, and Wildlife and Provides for Recreation In and On the Water be Achieved by 1 July 1983. (5)	Not Applicable

REFERENCES:

(1) Pretreatment Requirements in 40 CFR 128, November 8, 1973, Federal Register.
(2) Effluent Limitations and Pretreatment Requirements for Industries in 40 CFR 405 Through 435 in Federal Register.
(3) Secondary Treatment Information or More Stringent Limitations in 40 CFR 133, August 17, 1973, Federal Register.
(4) EPA Report Entitled Alternative Waste Treatment Management Techniques and Systems for BPWTT.
(5) National Goals in Section 101(a) of PL92-500.

The Anticipated 1978 Annual Plan...

The 1977-78 annual planning cycle will actually begin in late 1976-early 1977 with the identification of the characteristics of waste treatment capacity and sewage service alternatives. The process of formulating and testing alternatives during the 1977-78 annual planning cycle is fully described in the next chapter beginning with Activity 415, and is illustrated in Figure III-2.

The process of identifying system alternatives and assessing their regional development impacts, and of identifying areawide water resources management strategies and assessing their economic, social and natural resources impacts, will be performed iteratively over a considerable span of time. As the alternative strategies are narrowed, more detail as to the structural and management/regulatory measures actually included in each strategy will become better defined, and implementation programs for these strategies will be developed. Each iterative cycle is expected to be approximately four to five weeks in length.

The 1978 Annual Plan will include the following:

1. 1978 Impact Assessment. From the iterative process will emerge the 1978 Impact Assessment in draft form, prepared by the consultant in Contract F, which embodies several alternative areawide water resources management strategies and associated implementation programs, and presents the costs and benefits of moving towards swimmable/fishable national goals as well as significant issues for consideration by the region's local elected officials. The elements from Section 208 of the Act and water quality management planning regulations which are the responsibility of areawide agencies will be addressed in this 1978 Impact Assessment. The 1977 Facilities Program and 1977 Impact Baseline will be incorporated into the 1978 Impact Assessment as appropriate.

2. Description of the Planning Process (1977-78). This document will update the Description of the Planning Process (1976-77) by summarizing the planning process, incorporating the "Summary of Public Participation," and further evaluating the public participation program. It will be prepared by the NCTCOG staff in Activity 115.

Initial drafts of the 1978 Annual Plan will be submitted to the Areawide Planning Advisory Committee in late 1977-early 1978 and through subsequent review and approval steps in Activity 125 of the next chapter.

Section 208 of PL 92-500 specifies the contents of the 1978 Annual Plan. These requirements are reproduced verbatim below. Greater detail on the plan content requirements is contained in the EPA regulations on water quality management planning.

The plan content requirements of Section 208(b)(2) of the federal act are as follows:

> "Any plan prepared under such process shall include, but not be limited to —

'(A) the identification of treatment works necessary to meet the anticipated municipal and industrial waste treatment needs of the area over a twenty-year period, annually updated (including an analysis of alternative waste treatment systems), including any requirements for the acquisition of land for treatment purposes; the necessary waste water collection and urban storm water runoff systems; and a program to provide the necessary financial arrangements for the development of such treatment works;

'(B) the establishment of construction priorities for such treatment works and time schedules for the initiation and completion of all treatment works;

'(C) the establishment of a regulatory program to —
  '(i) implement the waste treatment management requirements of section 204(c),
  '(ii) regulate the location, modification, and construction of any facilities within such area which may result in any discharge in such area, and
  '(iii) assure that any industrial or commercial wastes discharged into any treatment works in such area meet applicable pretreatment requirements;

'(D) the identification of those agencies necessary to construct, operate, and maintain all facilities required by the plan and otherwise to carry out the plan;

'(E) the identification of the measures necessary to carry out the plan (including financing), the period of time necessary to carry out the plan, the costs of carrying out the plan within such time, and the economic, social, and environmental impact of carrying out the plan within such time;

'(F) a process to (i) identify, if appropriate, agriculturally and silviculturally related nonpoint sources of pollution, including runoff from manure disposal areas, and from land used for livestock and crop production, and (ii) set forth procedures and methods (including land use requirements) to control to the extent feasible such sources;

'(G) a process to (i) identify, if appropriate, mine-related sources of pollution including new, current, and abandoned surface and underground mine runoff, and (ii) set forth procedures and methods (including land use requirements) to control to the extent feasible such sources;

'(H) a process to (i) identify construction activity related to sources of pollution, and (ii) set forth procedures and methods (including land use requirements) to control to the extent feasible such sources;

'(I) a process to (i) identify, if appropriate, salt water intrusion into rivers and estuaries resulting from reduction of fresh water flow from any cause, including irrigation, obstruction, ground water extraction, and diversion, and (ii) set forth procedures and methods to control such intrusion to the extent feasible where such procedures and methods are otherwise a part of the water treatment management plan;

'(J) a process to control the disposition of all residual waste generated in such area which could affect water quality; and

'(K) a process to control the disposal of pollutants on land or in subsurface excavations within such area to protect ground and surface water quality.'"

As noted previously, the U.S. Environmental Protection Agency has published regulations based on the Act identifying the elements which are to be included in each State and areawide water quality management plan.[1] The elements which are the responsibility of areawide agencies will be addressed in this 1978 Annual Plan.

In addition, other regulations place requirements on the areawide planning process. For example, the final EPA regulations on Environmental Impact Statements require that the Section 208 planning include the preparation of an Environmental Impact Assessment, and the final EPA regulations on public participation specify the minimum content of the Section 208 public participation program.

The Anticipated 1979 Annual Plan...

In agreeing to undertake areawide water quality management planning, NCTCOG has accepted responsibility for annually updating the areawide plan. Regulations for such updates have not yet been promulgated by EPA. The annual Unified Work Program will be the vehicle which addresses how the updates will be prepared.

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[1] U.S. Environmental Protection Agency, "Preparation of Water Quality Management Plans," (40 CFR, Part 131), Section 131.11 Plan Content, November 28, 1975, Federal Register.

III. The Work Program

The 1975-1978 work program for water quality management planning is divided into two parts. In the first section the activities to be performed by the NCTCOG staff with the active involvement of the subcommittees of the Areawide Planning Advisory Committee are identified within four broad elements. The process for formulating and testing alternatives with key dates indicated is presented in Figure III-2 under Element 400.

In the second section of the work program, the contract services required by NCTCOG in conducting the planning process and preparing the annual plans are discussed. Figure III-5 in that section indicates the anticipated schedule for these contracts.

What NCTCOG Staff Will Do...

The design of the overall NCTCOG work program on an annual basis requires the cooperation of, and coordination with, each functional department to ensure that the components of the overall NCTCOG planning effort are working towards a "common" goal. During the 1975-1978 period, the integration of functional planning efforts at NCTCOG will be oriented toward development of a Preferred Regional Development Policy (PRDP).

The work program that follows reflects a considerable degree of coordination between the Department of Water Resources, the Department of Transportation, and the Department of Management and Planning Coordination. Where appropriate, the work program includes the major tasks to be performed by these other departments.

The portion of the 1975-1978 Work Program for NCTCOG staff is organized under four major work categories or "elements". These elements reflect the range of activity to be performed under the continuing planning process. A summary of these four elements follows.

ELEMENT 100 UNIFIED PLANNING PROGRAM

Included in this element are staff activities which provide for, assist, and encourage the participation of NCTCOG committees, local elected officials, State and Federal officials, government and special purpose agency staffs, interested and affected private groups, and the "person-in-the-street" in the areawide water quality management planning process. Individual activities within Element 100 are:

Activity 105	Support NCTCOG Committee Involvement
110	Provide Program Management
115	Design and Conduct Public Participation Program
120	Prepare Unified Work Program
125	Submit and Approve Annual Plan
130	Monitor Implementation

ELEMENT 200 DATA COLLECTION AND MANAGEMENT

Staff activities which involve the continuing identification, collection, formulating, storage, display and management of historic and current data are included in this element. Individual activities within Element 200 are:

Activity 205	Adopt Common Planning Standards Within NCTCOG
210	Identify and Employ Multiformat Data Storage and Display System
215	Develop and Maintain Inventory of Socioeconomic Characteristics
220	Develop and Maintain Inventory of Significant Natural and Manmade Features
225	Coordinate Water Quality Sampling
230	Review Performance of Water Resources Management System

ELEMENT 300 TOOLS FOR ANALYSIS

Within this element are staff activities involving the development and maintenance of tools, techniques and methodologies needed to conduct analyses of current problems and to assess impacts of alternatives as part of the continuing planning process. Individual activities in Element 300 are:

Activity 305	Maintain and Improve Urban Growth Simulation Model
310	Develop and Maintain Techniques to Estimate Sewage Flows and Loads

315 Assist in Development and Maintain Techniques to Assess Nonpoint Sources

320 Assist in Development and Maintain Techniques to Assess Alternative Waste Load Allocations in Streams and Eutrophication in Lakes

325 Assist in Development and Maintain Techniques to Assess Areawide Cost, Air Quality, Energy, and Residual Impacts of Alternative Areawide Water Resources Management Strategies

ELEMENT 400 IMPACT ASSESSMENT OF ALTERNATIVES

Staff activities in this Element include the identification of alternatives and the assessment of their areawide impacts for consideration by the Areawide Planning Advisory Committee. Individual activities in Element 400 are:

Activity 405 Develop and Improve Comprehensive Framework for Formulating and Testing Systems and Strategies

410 Assist in Preparing 1977 Annual Plan (Summary, Facilities Program, Impact Baseline, and Description of the Planning Process)

415 Identify Alternative Systems for Waste Treatment Capacity and Sewage Service for Testing

420 Assist in Assessing Impacts of Alternative Systems on Regional Development

425 Identify Alternative Areawide Water Resources Management Strategies for Testing

430 Assist in Assessing Economic, Social, and Natural Resources Impacts of Alternative Strategies and Preparing 1978 Annual Plan (Impact Assessment including Alternative Implementation Programs)

In the remainder of this section, each activity within the four elements is discussed in detail with regards to its objective, any previous and ongoing work, the scope of work and methodology to be used, the products expected to result, staffing, responsibility within NCTCOG, and the relationship to the grant application.

ELEMENT 100
UNIFIED PLANNING PROGRAM

ACTIVITY 105 SUPPORT NCTCOG COMMITTEE INVOLVEMENT

Objective: To provide staff support and services to the Areawide Planning Advisory Committee (APAC), its subcommittees, and other NCTCOG committees on water quality matters.

Previous and Ongoing Work: In November of 1967, NCTCOG established the Regional Water Policy Development Committee for the purpose of determining a strategy for providing a Regional Water and Sewer System for North Central Texas in accordance with NCTCOG's designation by the Texas Water Quality Board and the Governor for planning a regional comprehensive sewerage system for all or part of 21 counties located in the Upper Trinity River Basin.

This Committee played an active role in the preparation of the Upper Trinity River Basin Comprehensive Sewerage Plan and subsequently guided the preparation of the Management and Finance Program which recommended alternatives to implementation of this plan.

As an outgrowth of the Management and Finance Plan, the Water Policy Development Committee was phased out and the NCTCOG Water Quality Council was established to provide overall guidance and direction for the Comprehensive Sewerage Plan. In December of 1975, the Governor's Division of Planning Coordination appointed an Areawide Planning Advisory Committee to serve as the policy advisory committee to the NCTCOG Executive Board for 208 planning. Several subcommittees have also been established to assist in the planning procedure. Operating procedures were adopted by APAC in June, 1976.

Scope of Work and Methodology: Certain administrative and informational requirements are necessary for the functioning and support of these committees. Work under this activity includes preparing agendas and mailouts, preparing special briefings, participating in meetings, keeping minutes, arranging meeting rooms, and so forth.

Product: Copies of notices and information prepared and distributed to these committees are maintained within the vertical files of the Department of Water Resources.

Staffing: Work under this activity is the responsibility of the Director and the Senior Secretaries of the Department of Water Resources with support from other staff members as needed.

Relationship to Grant Application: This activity includes Task 1.4, Establish Area Planning Advisory Committee, but goes beyond its limited scope.

ACTIVITY 110 PROVIDE PROGRAM MANAGEMENT

Objective: To provide technical direction to the water resources planning effort and perform the managerial and supervisory functions related directly thereto within the Department of Water Resources.

Previous and Ongoing Work: The staff of the Department of Water Resources and NCTCOG support departments has been expanded to ensure successful accomplishment of the areawide water quality management planning process. This activity includes program management of the other staff activities and contracts identified in this work program.

Scope of Work and Methodology: Much of the time of the Director and Assistant Director of Water Resources is spent in providing adequate direction to assure that all tasks within the program are carried out and end products or objectives met. These responsibilities include scheduling and sequencing of work, delineating the scope of work to be incorporated in all subcontracts, preparation of internal and external progress reports including the quarterly and semi-annual progress reports, financial management of operations based on financial information provided by the Department of Administration, general supervisory activities in connection with personnel, participation in EPA or State-sponsored conferences on areawide planning, and interdepartmental and interagency coordination.

Product:

I. Quarterly progress reports on the areawide water quality management planning process.

II. "Program Control Guide" to provide internal program control.

Negotiated Contracts A through M (see fourth chapter for procurement process).

Staffing: This activity includes the major responsibilities of the Director and Assistant Director of Water Resources.

Relationship to Grant Application: This activity includes the combination of Tasks 1.1, 1.3, and 1.8 but goes beyond their limited scope.

ACTIVITY 115 DESIGN AND CONDUCT PUBLIC PARTICIPATION PROGRAM

Objective: To review and evaluate means for active involvement by the public in the areawide planning process, to implement a public participation program, and to periodically evaluate and improve this program. It will encompass local governments and agencies, interested and affected groups, and the general public.

Previous and Ongoing Work: Previous water resources studies by NCTCOG have included public meetings to obtain review and comment on recommended programs, and the distribution of informational materials.

The Department of Transportation maintains a Public Information and Community Involvement Program, and the "1975-1976 Unified Work Program for Transportation Planning in the North Central Texas Region" which includes several work program elements for improving that program for citizens at the community level and for minority groups. The work program of the NCTCOG Department of Management and Planning Coordination includes a program for "Community and Public Involvement" as Work Element 8.

Each local government and agency currently maintains its own program of public participation. If the governmental unit receives Federal funds under the Federal Water Pollution Control Act Amendments of 1972, it is subject to the same Federal guidelines as this program.

Scope of Work and Methodology: This Act includes the most comprehensive authority and requirement for public participation ever written into Federal law. However, according to a recent report prepared for the National Commission on Water Quality, this opportunity to give the public a more active planning role has not been used to its full advantage. The report indicates that, as in the past, only the minimum requirements are being met, with the general attitude that public involvement is more a bane than a bonus. Section 208 offers the public its greatest opportunity to participate in the Act because it is so heavily dependent upon gauging public opinion to determine the most implementable plan.

The 1976-77 Annual Public Participation Program for Water Quality Management Planning entitled "Let's Talk Clean Water" was adopted by the Areawide Planning Advisory Committee in June, 1976. It addresses the following components:

- What is Public Participation?
- What are the Goals?
- Who Participates? - The government, the interested groups and organizations, and the general public are discussed.
- How Does the Public Participate? - Mechanisms being employed by NCTCOG are identified under the following headings: annual review process, informational materials and techniques, distribution and review of planning products, assistance to the public, consultation (including subarea groups, General Assembly meetings, workshops and seminars, public meetings, surveys and questionnaires, liaisons from interested groups, informal contacts and others), notification, access to information, and enforcement, legal proceedings and rule-making.
- What is the Staffing and Funding? - The responsibilities of key staff members of NCTCOG and the budget allocation for public involvement activities are presented.
- How is it Documented, Evaluated, and Changed? - The annual summary and evaluation of public participation activities and the resulting annual public participation program are discussed.

Product:

Ia. Preliminary draft of "Let's Talk Clean Water", 1976-77 Annual Public Participation Program for Water Quality Management Planning.

Ib. Final draft (adopted in June, 1976 by APAC).

IIa. Preliminary draft 1977-78 Annual Public Participation Program for Water Quality Management Planning.

IIb. Final draft 1977-78 Annual Public Participation Program for Water Quality Management Planning.

- (Annual Summary of Public Participation is part of annual plan "Description of the Planning Process" in Activity 125).

Staffing: Work under this activity is the responsibility of the Public Information Specialist, under the general direction of the Assistant Director of Water Resources, and includes significant involvement of all staff members.

Relationship to Grant Application: This activity is identical to the combination of Tasks 1.5 and 1.6 of of the grant application.

ACTIVITY 120 PREPARE UNIFIED WORK PROGRAM

Objective: To incorporate into one document, periodically updated, information on all water quality and directly related environmental and comprehensive planning activities in the North Central Texas region. The Unified Work Program (UWP) will be used: (1) to facilitate coordination of technical studies by local governments, basin agencies, TWQB, State agencies, consultants, Federal agencies, universities, and private groups; (2) to prevent duplication of effort; and (3) to encourage studies consistent with the adopted priorities of the APAC.

Previous and Ongoing Work: It is expected that water, environmental and land use planning programs, studies and consulting projects of the following organizations and agencies would be incorporated into the Unified Work Program:

- Local and special districts - programs of members of the NCTCOG;
- Regional - programs of NCTCOG, Trinity River Authority of Texas;
- State - programs of applicable agencies of the State of Texas, including Texas Water Quality Board, Texas Department of Health Resources, Texas Air Control Board, Texas Water Development Board, Texas Railroad Commission, Texas Water Rights Commission, Texas Soil and Water Conservation Board, Texas Parks and Wildlife Department, The Interagency Natural Resources Council, and others (note that State Areawide Planning Coordinator for 208 shall act as liaison with State agencies for this task);
- Federal - relevant programs of EPA, HUD, Agricultural, Defense, HEW, Commerce, Interior, and others;

- Universities - relevant programs of members of Inter-University Council of the North Central Texas area, and others;
- Private - relevant programs of the League of Women Voters, Chambers of Commerce, North Texas Commission, professional organizations, developers, and others; and
- Consultants - studies prepared by consultants to the above-named groups.

The NCTCOG staff will use the following in its development of this task:

- 1975-1976 Unified Work Program prepared by NCTCOG Department of Transportation;
- Identification of special studies contained in Trinity River Authority's "Water Quality Management Plan for the Trinity River Basin", June, 1974;
- Subcommittees of the APAC; and
- NCTCOG Information Management System (NIMS).

Scope of Work and Methodology: The following steps will be accomplished:

120.1 Prepare NCTCOG 1975-78 Water Quality Management Planning Program (Project Design Report for 208).

120.2 Identify and maintain current lists of all governmental organizations and agencies, public and private organizations, and individuals who have conducted or who are likely to conduct water quality and waste treatment management planning, and related environmental and land use studies in the region.

120.3 Develop appropriate mechanisms whereby these organizations and individuals shall notify the staff of NCTCOG when they are considering to undertake or are undertaking studies relevant to the 208 work program, or important milestones in their continuing planning programs (including State continuing planning process and facilities Step 1 planning).

120.4 Obtain and maintain current the following information for each study so identified:

1. Title of study,
2. Organizations performing/responsible,
3. Study area,
4. Objective,
5. Previous and ongoing work,
6. Scope of work and methodology,
7. Product,
8. Schedule,
9. Staffing,
10. Funding,
11. Contact person, and
12. Other information as required by the APAC.

120.5 Organize this information into a suitable format and prepare a prototype 1976-1977 Unified Work Program containing the information and any additional comments prepared by the NCTCOG staff and subcommittees, for APAC and/or subcommittee review.

120.6 Publish and distribute prototype 1976-1977 Unified Work Program to interested and affected parties for their information, review and comment. Maintain record of all comments.

120.7 Prepare and publish on a quarterly basis status reports which update status of activities, indicate significant accomplishments to date, add new studies, and provide other relevant information.

120.8 Identify and recommend to APAC methods and procedures for achieving effective coordination among organizations performing studies, and for improving the Unified Work Program.

120.9 Based on first year's experience and recommendations of APAC, prepare 1977-1978 Unified Work Program and subsequent annual Unified Work Programs and quarterly status reports.

120.10 Prepare subsequent work programs for areawide water quality management planning under Section 208 and incorporate into Unified Work Program.

Product:

Ia. Preliminary draft of "What Is Our Water Worth?", the 1975-78 Water Quality Management Planning Program.

Ib. Final draft (this document).

II. Prototype 1976-1977 Unified Work Program.

III. Quarterly status reports during 1977.

IV. 1977-78 Unified Work Program.

V. Quarterly status reports during 1978 (and subsequent annual Unified Work Programs).

Staffing: Work under this activity is the responsibility of the Planner/Engineer of the Department of Water Resources.

Relationship to Grant Application: Section C, Statement of Planning Consistency and Coordination, of the grant application certifies that the areawide planning process will be consistent with and will be in coordination with a multitude of other planning efforts. This activity will be the vehicle to achieve this coordination. This activity includes Task 1.2 but goes beyond its limited scope.

ACTIVITY 125 SUBMIT AND APPROVE ANNUAL PLAN

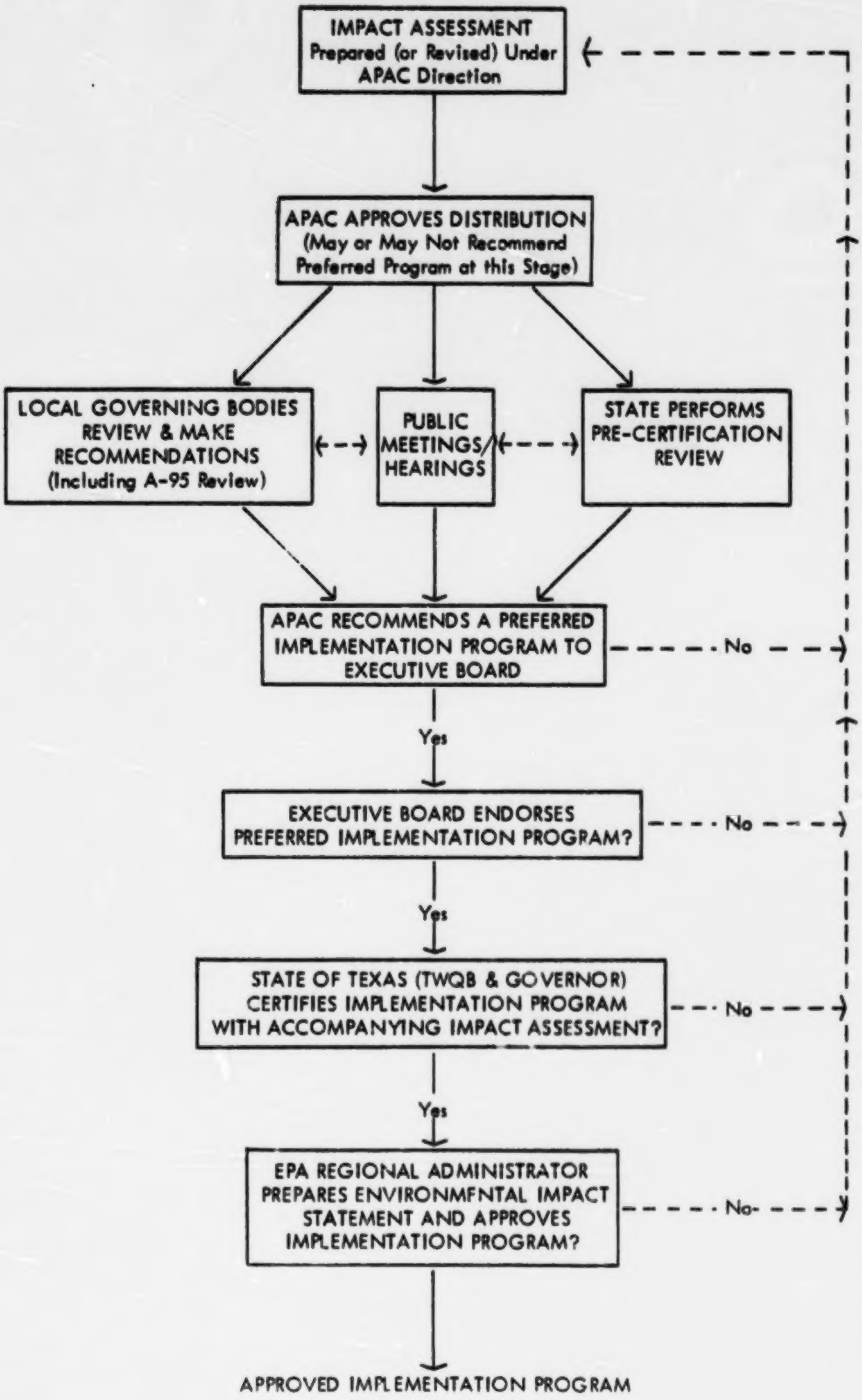
Objective: To provide staff support for the APAC's submitting the annual plan including recommendation of management agencies to local governing bodies for their review and recommendations, approval by the NCTCOG Executive Board, review and certification by the Texas Water Quality Board and the Governor, and review and approval by the EPA Regional Administrator.

Previous and Ongoing Work: No other programs of NCTCOG undergo the extensive review and approval procedures required under this program. However, the facilities projects of local governments must receive local, State, and EPA approval.

Scope of Work and Methodology: On an annual basis beginning in 1976-77, the annual plan will be submitted through the required review and approval process. The steps in this review process are illustrated in Figure III-1. Considerable staff support for this process is envisioned. A preliminary draft "Description of the Planning Process" will be prepared annually summarizing the planning process and participation by all parties, including material from Activity 115, prior to submission of the plan to APAC, and will be revised based on the results of the formal review and approval process for submission to EPA.

First, the Areawide Planning Advisory Committee will approve distribution of the annual Impact Assessment to local governing bodies for their review and recommendations, will schedule public meetings/hearings on the

FIGURE III-1
REVIEW AND APPROVAL PROCESS OF ANNUAL PLAN


IMPACT ASSESSMENT Prepared (or Revised) Under APAC Direction
APAC APPROVES DISTRIBUTION (May or May Not Recommend Preferred Program at this Stage)
LOCAL GOVERNING BODIES REVIEW & MAKE RECOMMENDATIONS (Including A-95 Review)
PUBLIC MEETINGS/ HEARINGS
STATE PERFORMS PRE-CERTIFICATION REVIEW
APAC RECOMMENDS A PREFERRED IMPLEMENTATION PROGRAM TO EXECUTIVE BOARD
No
Yes
EXECUTIVE BOARD ENDORSES PREFERRED IMPLEMENTATION PROGRAM?
No
Yes
STATE OF TEXAS (TWQB & GOVERNOR) CERTIFIES IMPLEMENTATION PROGRAM WITH ACCOMPANYING IMPACT ASSESSMENT?
No
Yes
EPA REGIONAL ADMINISTRATOR PREPARES ENVIRONMENTAL IMPACT STATEMENT AND APPROVES IMPLEMENTATION PROGRAM?
No
APPROVED IMPLEMENTATION PROGRAM

Impact Assessment, will submit the document to the State for pre-certification review, and may or may not recommend a preferred implementation program(s) at this stage.

Based on comments and recommendations from public meetings/hearings, State and local governing bodies, the APAC will either: (a) recommend the preferred implementation program(s) to the NCTCOG Executive Board for endorsement with accompanying Impact Assessment; or, (b) direct the staff to revise the Impact Assessment as needed and resubmit for local government and public review.

Upon receipt of an APAC recommendation, the Executive Board will either: (a) endorse the implementation program(s) preferred by the APAC and the Impact Assessment for transmittal to the State of Texas; or, (b) return comments to the APAC for further work.

Upon receipt of the implementation program(s) and Impact Assessment from NCTCOG, the State of Texas, through the Texas Water Quality Board and the Governor, may either: (a) certify the implementation program(s) and transmit to the EPA Region VI Regional Administrator for approval; or, (b) refuse to certify and transmit back to NCTCOG for further work.

Upon receipt of the Impact Assessment and implementation program(s), the Regional Administrator of the U.S. Environmental Protection Agency Region VI will prepare an Environmental Impact Statement. Based on NCTCOG and State recommendations and this EIS, the Regional Administrator may either approve or disapprove the implementation program(s).

Product:

- Summaries of all meetings and copies of all correspondence will be maintained in the vertical files of the Department of Water Resources.

Ia. Preliminary draft of the "Description of the Planning Process (1976-77)".

Ib. Final draft.

IIa. Preliminary draft of the "Description of the Planning Process (1977-78)".

IIb. Final draft.

Staffing: Work under this activity is the responsibility of the Director of Water Resources with support from other water resources staff.

Relationship to Grant Application: This activity is identical to the combination of Tasks 5.1, 5.3, 5.4, and 5.5 of the grant application.

ACTIVITY 130 MONITOR IMPLEMENTATION

Objective: To monitor implementation of local, state, and Federal projects and to review proposed programs and projects for consistency with the adopted plan or adopted priorities of NCTCOG.

Previous and Ongoing Work: The Upper Trinity River Basin Comprehensive Sewerage Plan prepared in the early 1970's identified certain projects to be implemented in the recommended first stage construction period through 1975. Implementation has been monitored through such vehicles as informal contracts with local staffs and consulting engineers, receipt of notices of permits, and review of proposed projects.

Scope of Work and Methodology: This activity includes the continuation of the monitoring efforts conducted by NCTCOG and the identification of recommended improvements if needed. It is anticipated that various types of projects and programs will be recommended in each annual water quality management plan. While Activity 230 is designed to review the performance of such projects once they are implemented, this Activity 130 is oriented towards monitoring the steps from recommendation in the plan to actual implementation.

Note that although NCTCOG, as the designated metropolitan clearinghouse, reviews most Federal grant-in-aid projects including those in water quality management, the actual performance of these reviews remains the responsibility of the Regional Services Division of the NCTCOG Department of Management and Planning Coordination and will not be charged to the water quality management planning program grant.

Product: Periodic summary reports to APAC.

Staffing: Work under this activity is the responsibility of the Director of Water Resources.

Relationship to Grant Application: This activity includes a portion of Task 1.8 of the grant application.

ELEMENT 200
DATA COLLECTION AND MANAGEMENT

ACTIVITY 205 ADOPT COMMON PLANNING STANDARDS WITHIN NCTCOG

Objective: To adopt common planning standards and specifications for use among the various functional departments in NCTCOG, including planning area, geographic units, target years, and so forth.

Previous and Ongoing Work: The planning areas for functional planning programs of NCTCOG have differed in the past according to the Federal or State funding source. Thus, multimodal transportation planning is conducted for the urbanized portion of the region referred to as the Intensive Study Area. The Section 208 designated planning area encompasses a larger area than this Intensive Study Area. Also, data collected on a small-area geographical basis has not always been useful for other programs on a different small-area basis. The need to coordinate the planning activities within NCTCOG, especially those of transportation, housing, land use, and water resources, has led to the identification of this task within the work program of the NCTCOG Department of Management and Planning Coordination. These common planning standards will be used in the remainder of the staff and consultant activities in this work program.

Scope of Work and Methodology: It is essential that a common data base be developed within a common Policy Planning Area. It is the task of the Department of Management and Planning Coordination (M&PC) to collect all pertinent data (socio-economic and environmental) that is regional in application; therefore, a small-area geographic base unit compatible with the aims of the functional departments must be identified. It will also be the task of M&PC to coordinate the determination of such things as the appropriate employment base development and the most appropriate mapping scale, etc. This activity is Work Element 2.0 within the M&PC Work Program.

The tasks included in the M&PC Work Program (except 205.7) include:

205.1 Determine appropriate Policy Planning Area. Prior to the time of printing of this water quality management planning work program, the boundaries of this Policy Planning Area had been chosen. It encompasses all of the Section 208 designated planning area and extends beyond it in the south.

205.2 Determine appropriate geographic unit. It has been agreed that alternative population and employment forecasts will be distributed in the model by Regional Analysis Area, be disaggregated by traffic survey zone (TSZ) and be aggregated into watersheds. The possibility of using a grid-based geographic system for natural features data is under consideration. The existing Dallas Ecological Study is grid-cell based, and the Soil Conservation Service and Corps of Engineers have expressed interest in grid-cells.

Drainage areas have been superimposed on a map of more than 6,000 traffic survey zones (TSZ). Each TSZ which apparently fell within two drainage areas was analyzed using detailed maps to determine which drainage area it should be assigned to such that splitting of TSZ's would be avoided. A table of equals has been constructed assigning TSZ's to drainage areas.

205.3 Determine employment/land use categories for disaggregation process. By letter dated September 29, 1975, NCTCOG recommended to the TWQB that a two-level land use classification system be considered at this time. On October 23, 1975, the TWQB notified the designated Section 208 planning agencies in Texas that the two-level classification system would be used to conduct the planning process. This system is described in Activity 215.

205.4 Determine appropriate target years (e.g., 1980, 1985, 1990, 1995).

205.5 Develop appropriate mapping system (1"=1 mile) and identify traffic survey zones in the total area.

205.6 Develop procedure for determining regional population and employment control totals to be used in alternative testing. This process will include policy considerations as well as technical input.

205.7 Determine with the TWQB the detailed stream segments addressed in the water quality modeling in Element 300.

Product:

1. Common planning standards expressed through maps or other support materials.

Staffing:

These tasks are being accomplished under the direction of an interdepartmental task force of NCTCOG staff, including representatives from the Department of Water Resources. Work under this activity is the responsibility of the Department of Management and Planning Coordination.

Relationship to Grant Application: This activity is a portion of Task 2.271 of the grant application.

ACTIVITY 210 IDENTIFY AND EMPLOY MULTIFORMAT DATA STORAGE AND DISPLAY SYSTEM

Objective: To identify and employ various conventional and innovative methods for storing and displaying data. Among techniques to be evaluated will be manual storage, microfiche, photographs, computer storage and retrieval, and so forth. A multiformat system combining several of these techniques is envisioned.

Previous and Ongoing Work: It is expected that a considerable amount of data will be collected and stored during the areawide planning process on a wide range of subjects. Existing NCTCOG information management systems will be reviewed for expanded use in water resources. One such system is the North Central Texas Council of Governments Information Management System, referred to as NIMS, established in 1973 based on a study design by Peat, Marwick, and Mitchell & Co. The study design emphasized that while the NIMS computer system would be a valuable tool, it is part of the total data management concept and not itself the complete answer. Other resources, which include people, procedures, the data base and physical facilities must also be organized for effective data management.

Four alternative data management systems were evaluated by the consultant, including three computer systems and a manual system. The selected computer-based system is designed to index and report on each data item of importance received by NCTCOG. As a document is received, certain standardized information about the document is noted on a specially designed encoding form. This data is computerized and periodically, a listing that contains multiple geographic and subject references to each document in the NCTCOG collection is printed. The NIMS System is designed to produce two reports for distribution to each program area, an index list of the master file, and a listing designed to show each department the scope of its current collection. Responsibility for the operation of NIMS rests with the Department of Public Affairs.

The NCTCOG Department of Transportation also maintains several data management systems of relevance, each of which is identified in its current Unified Work Program under an overall category of Data

Development and Maintenance. These include an environmental data base, aerial mapping program, geographic base (DIME) file, land use computer files, and others. These are discussed further in related activities in this element.

The relationship of proposed NCTCOG approaches to State or Federal storage-display systems such as the Texas Water Oriented Data Bank and STORET will be considered. Wherever data should be collected in a uniform format, that format will be developed in this activity. Data from the other activities in this element will be stored using this storage and display system.

Scope of Work and Methodology: This activity includes a review and evaluation of the existing NCTCOG information systems with particular attention to NIMS and the transportation planning systems. Major storage, retrieval and display techniques will be assessed regarding major data sets now in existence, information needs, methods of information storage, and present staffing requirements.

Based on this evaluation, the design of the needed multiformat Water Information System will be prepared. The system will emphasize ready access to available sources of data from other agencies, rather than attempting to put all available data within a NCTCOG-located data bank. However, as data is gathered through activities in Element 200, it will be incorporated into the information system. A multiformat system combining map overlays at a suitable scale, photographs, and computer storage and retrieval is envisioned. A significant portion of the evaluation and development of the system will be accomplished by the consultants from Contracts D and F.

Product: A Water Information System Handbook, to be called the WISH book, will be prepared to describe the data storage and display system and the location of available data.

Staffing: These tasks will be accomplished under the direction of an interdepartmental task force of NCTCOG staff. Work under this activity is the responsibility of the Systems Analyst working with the Department of Water Resources.

Relationship to Grant Application: Inherent in the various activities in the grant application involving data collection, but not specified as an overall activity.

ACTIVITY 215 DEVELOP AND MAINTAIN INVENTORY OF SOCIOECONOMIC CHARACTERISTICS

Objective: To develop and maintain a data base of existing and historical population and employment patterns and distribution, and other socioeconomic characteristics.

Previous and Ongoing Work: NCTCOG has collected information on socioeconomic characteristics for several years, principally as part of the transportation planning process. In Activity 205, the traffic survey zone, a subunit of the Regional Analysis Area, has been selected as the smallest geographic unit for socioeconomic data collection. Under Work Program Element 1.1.1 of the Transportation Unified Work Program, the Transportation Department maintains computer files which contain selected population, housing, employment, income and land use data by regional analysis area and census tract. A procedural manual has been developed to assist the user in accessing the file and to establish procedures for updating and supplementing the file. Retail sales data files are under development.

The socioeconomic data will be maintained for the small geographic areas agreed upon in Activity 205 for the Policy Planning Area.

Scope of Work and Methodology: This activity is a majority of Work Element 3.0 within the Department of Management and Planning Coordination work program. It includes:

215.1 Develop table of equals for traffic survey zone to drainage area; regional analysis area to traffic survey zone (outside current Intensive Study Area portion of Policy Planning Area from Activity 205).

215.2 Gather 1975 employment data by traffic survey zone.

215.3 Gather 1975 housing data for Policy Planning Area by traffic survey zone.

215.4 Income data by small area (1975) (Regional Analysis Area or traffic survey zone?).

215.5 Estimation of 1975 population by Regional Analysis Area.

215.6 1970 population by Regional Analysis Area for Policy Planning Area.

215.7 Development of procedure to translate data sets from Regional Analysis Area to traffic survey zone to drainage area.

215.8 Inventory and update of all data sets required for 1975 calibration of Urban Growth Simulation Model.

Product:

I. Data sets of 1975 population and housing by small area.

II. Data sets of 1975 employment by small area.

Staffing: These tasks will be accomplished under the direction of several interdepartmental task forces of NCTCOG staff, each including representatives from the Department of Water Resources. Work under this activity is the responsibility of the Department of Management and Planning Coordination, including necessary coordination with the Department of Transportation's ongoing program.

Relationship to Grant Application: This activity is identical to Task 2.4 of the grant application although the scope may have been expanded a little bit.

ACTIVITY 220 DEVELOP AND MAINTAIN INVENTORY OF SIGNIFICANT NATURAL AND MANMADE FEATURES

Objectives: To develop and maintain a regional natural features data bank for significant natural and manmade features.

Previous and Ongoing Work: Considerable effort has been devoted by the Department of Transportation and the Department of Management and Planning Coordination in collecting data on natural features, land use, and other significant manmade features.

The Department of Transportation under Work Program Element 1.2.2 of its Unified Work Program maintains an aerial mapping program. Under previous work programs, aerial mosaics at scales of 1" = 4000' and 1" = 2000' for the transportation Intensive Study Area have been prepared for 1973 and 1975. Enlargements for the central business districts and a series of 300 photo film positives at a scale of 1" = 800' have been prepared for 1971, 1973, and 1975 for the Intensive Study Area. Maintenance of the series of photo film positives is included in the current Transportation Unified Work Program, including expansion of coverage to the growth area adjacent to the Intensive Study Area for Transportation. Experience in the analysis of growth identified through the photo film positives indicated that aerial photography biannually met the needs for updating data sets and monitoring regional growth. The next flights are therefore scheduled for 1977.

The Department of Transportation maintains a library file of pertinent information elements on environmental considerations, has prepared a data systems design, and is near completion of the identification of historical sites on the National Register.

The Dallas Ecological Study, done by the City of Dallas in 1973, utilized grid cells of 61.8 acres for the entire Dallas County area, and information from that effort would be used.

Scope of Work and Methodology: The development of a regional natural features data bank and data sets is included as a major portion of Work Element 3.0 within the Department of Management and Planning Coordination. Funding from other programs within NCTCOG besides Water Resources will be made available to this task. The following outline describes in a preliminary fashion the overall sequence of work items necessary for the establishment of the data bank and preparation of data sets.

220.1 Determine appropriate geographic units from Activity 205. It is anticipated that a hierarchy of grid cells will be utilized for the natural features data bank, keyed to the Universal Transverse Mercator system included on USGS 1" = 2000' quad sheets, while the traffic survey zone will remain the geographic unit for subcategories of "urban" use.

220.2 Conduct literature search of land use and natural resource planning previously accomplished for portions of North Central Texas.

220.3 Set up workshop and/or meetings for input from other agencies (SCS, COE, public works departments, local governments, etc.) on data variables.

The choice of what data variables or parameters might be considered significant depends on the use envisioned for the data. Possible uses within NCTCOG might include identification of critical open space areas which are extremely sensitive to development, calculation of nonurban runoff and erosion from watersheds, calculation of "development ceilings" in allocating future population to traffic survey zones, providing detailed data to public works departments and the private sector, and so forth.

The subtasks for this step include:

- Determine potential uses of data bank.

- Determine data variables to be included in data bank.

- Categorize data variables.

- Select grid cell sizes appropriate for each data variable (hierarchy) approach. Sizes might include 61.8 acres, 15.45 acres, or 3.86 acres.

- Establish criteria for classification of each data variable.

It is expected that the initial variables for inclusion in the data bank will be:

- Current land use for the Level I categories of the USGS land use classification system and Level II or beyond for nonurban land. Use of this system will insure consistency with land use data developed on a statewide basis and will insure continued availability of data for update purposes. The Level I categories are: (1) urban or built-up land; (2) agricultural land; (3) range-land; (4) forestland; (5) water; (6) wetlands; (7) barren land; and (8) undeveloped land.

  Note that subcategories of "urban" land use will not be utilized in the grid-based system. Any breakdown of existing urban land use into such categories as residential, primary employment, or service employment will be performed by traffic survey zones or other appropriate transportation planning area as part of the calibration of the Urban Growth Simulation Model.

- Soils information from unpublished maps to be provided by the local staff of the Soil Conservation Service (SCS) by grid or polygon-to-grid under a cooperative agreement as part of Contract G, Nonpoint Source Studies.

- Slope and elevation information by grid prepared by comparing SCS data with the contour lines shown on USGS topographic quadrangles.

The need to map by grid cell other data such as historic sites will also be assessed. Additional data needs may be identified by the consultant under Contract F, Impact Assessment. For water resources planning, such physical structures as water treatment plants, wastewater treatment plants, major trunk sewer lines and so forth are of obvious interest. It is expected that such features will be inventoried by consultants in Contracts D and L, and information obtained will be mapped and displayed by these consultants in a compatible format with data from this activity.

220.4 Using available aerial photos at 1"= 800' interpret 1975 land use by the seven USGS Level I categories by drawing contours around each category for the entire Policy Planning Area.

220.5 Under a cooperative agreement in Contract G, Nonpoint Source Studies, the U.S. Soil Conservation Service (SCS) will then inventory and assign appropriate Level II, Level III and Level IV subcategories to all of the nonurban categories using the agreed-upon heuristics. (Note that the Transportation and M&PC Departments will also be overlaying traffic survey zones on aerial photos to interpret data required for the Urban Growth Simulation Model, including any greater specificity of urban land use by category needed by Transportation or M&PC.)

220.6 Under the cooperative agreement in Contract G, the SCS will identify individual soil types in the nonurban categories by grid cell or by polygon-to-grid cell using agreed-upon heuristics, and evaluate soil erodibility and other factors by each soil type.

220.7 If deemed necessary for specific watersheds as a result of the preliminary investigations by the consultant performing part of Contract G, the SCS with the assistance of NCTCOG will develop land use/soil type or land use/soil association matrices for 1975, associate appropriate erodibility and other factors, and make this data available for the calculation of sediment yield as described in Contract G.

220.8 Transpose appropriate data to grid maps (1" = 2000') and map in reproducible form for distribution to local governments.

220.9 If determined feasible, digitize and make data tapes of interpreted data for computer processing. The decision of whether to computerize which data will be made as part of the multiformat data storage and display system design in Activity 210 and needs in Contract G.

Product:

I. Working maps of 1975 land use.

II. Computer generated maps by county depicting soil type and slope data by grid cell.

III. Magnetic tape of soil data set.

IV. Computer generated maps by county depicting 1975 land uses by grid cell.

V. Magnetic tape of 1975 land use data set.

VI. General Soil Map at 1" = 4000 feet for region.

Staffing: These tasks will be accomplished under the direction of an interdepartmental task force of NCTCOG staff, including representatives from the Department of Water Resources. Work under this activity is the responsibility of the Department of Management and Planning Coordination.

Relationship to Grant Application: This activity includes portions of Tasks 2.13, 2.14, 2.18, and 2.21 of the grant application.

ACTIVITY 225 COORDINATE WATER QUALITY SAMPLING

Objective: To coordinate the design and field collection of water quality sampling necessary to support the areawide planning process.

Previous and Ongoing Work: Various local governments and agencies have water quality monitoring programs within the North Central Texas region. The Texas Water Quality Board Monitoring Program began with the Board's first operation in 1967. As the chief water quality agency in the State, the purposes of its monitoring program include determining where pollution problems exist, measuring the effect of pollution abatement actions over a period of time, and enforcement.

The U.S. Geological Survey Program includes both water quantity and water quality monitoring. The State Department of Health has been monitoring bacterial levels in the river since the mid-1960's. As of April 1974, the City of Dallas Wastewater Treatment Division sampling includes nine stations on Elm Fork. The City of Fort Worth, North Texas Municipal Water District and Trinity River Authority also conduct sampling programs. Each of these programs is summarized in the Basin Information report of the Trinity River Authority's Trinity River Basin Water Quality Management Plan.

To establish time of travel of solutes, dye studies were conducted on certain reaches of the river in 1972.

Scope of Work and Methodology: Several consultant contracts include the collection and analysis of water quality samples or the conduct of dye studies to determine time-of-travel. Under this activity, the NCTCOG staff will work with the 208 Technical Subcommittee and consultants in designing the needed sampling programs and coordinating data collection. Actual field data collection and analysis will be performed by participating agencies and/or consultants, not the NCTCOG staff.

This activity will be performed on an as-needed basis during the planning process as the scope of certain contracts is defined. These contracts include:

Contract C - Model Sampling
Contract F - Impact Assessment
Contract G - Nonpoint Source Studies
Contract H - Automated Monitoring
Contract J - Lake Ray Hubbard

The sampling program designs will address such topics as location of sampling, biota to be sampled, physical/chemical parameters to be sampled and priorities for sampling. NCTCOG will also receive summary reports of sampling results from the contract work.

It is expected that the Trinity River Authority of Texas will continue to be the lead agency in the region in coordinating water quality monitoring.

Product: Periodic reports to the Technical Subcommittee summarizing results of sampling programs.

Staffing: Work under this activity is the responsibility of the Staff Biologist of the Department of Water Resources.

Relationship to Grant Application: This activity includes all of Task 2.2 and portions of Tasks 2.14, 2.15, 2.16, 2.17, 2.18, 2.22, 2.23, and 2.26 of the grant application.

ACTIVITY 230 REVIEW PERFORMANCE OF WATER RESOURCES MANAGEMENT SYSTEM

Objective: To identify sources of data and to collect and maintain data where necessary on State and Federal permits, municipal and industrial waste treatment plants operating and effluent characteristics, waste control orders, or other sources for continued review of the management and performance of the water resources management system.

Previous and Ongoing Work: The Texas Water Oriented Data Bank (TWODB) subsystem of the Texas Natural Resources Information System maintains files on self-reporting waste discharge data submitted since 1970 to the Texas Water Quality Board by discharge permit (File No. 04030700), data selected from Waste Control Orders or permits issued by the TWQB (File No. 04030800), data from reports on municipal and industrial return flow, and other sources. Each operating agency also maintains records on the performance of its own system.

Scope of Work and Methodology: The data compiled by the TWODB and operating agencies will be identified and collected by the consultant performing Contract D, Point Source Analysis, and a simple computer-based information storage and retrieval system will be formulated and presented by the consultant for use by NCTCOG in the continuing planning process. Under this activity, required data will be obtained by NCTCOG by periodic accessing of this information system, and will be utilized by the APAC and its subcommittees to review the performance of the water resources management system. A list of management agencies will also be maintained.

Product: Periodic summary reports to the APAC.

Staffing: Work under this activity is the responsibility of the Staff Engineer of the Department of Water Resources.

Relationship to Grant Application: This activity includes a portion of Tasks 2.6 and 2.33 of the grant application.

ELEMENT 300
TOOLS FOR ANALYSIS

ACTIVITY 305 MAINTAIN AND IMPROVE URBAN GROWTH SIMULATION MODEL

Objective: To maintain and improve the Urban Growth Simulation Model (UGSM) and submodels, and to maintain awareness of emerging technologies.

Previous and Ongoing Work: The Urban Growth Simulation Model is a computer-based activity allocation model utilized by the NCTCOG for the past several years. Most recently, the UGSM and its submodels were applied during 1974 to test the regional development, social and environmental impacts of alternative transportation systems for the North Central Texas region for 1990. This process is described in the NCTCOG "The Total Transportation Plan for the North Central Texas Region for 1990". Existing staff of NCTCOG have used the model and are prepared to carry out the tasks identified in the activity. The UGSM will be the major evaluative tool in the development of the Preferred Regional Development Policy.

Scope of Work and Methodology: A conscious effort must be directed toward maintaining the proper level of sophistication in keeping with the current state of the art in planning. Included in this major work element of the Department of Management and Planning Coordination is the maintenance and development of such planning tools as the Urban Growth Simulation Model (UGSM) and the appropriate submodels. The UGSM will be used to test the regional development impacts of alternative systems in Element 400. In addition, it is the aim of M&PC to maintain awareness of other developing technologies and how they might be applied to enhance NCTCOG's overall capability.

The tasks included in the M&PC Work Program, Work Element 4, include:

305.1 Calibration of UGSM to 1975 - 1970 (Base Year).

305.2 Development of 1975 data sets for calibration run (e.g., development ceilings, attractiveness index, incomes, skims, etc.).

305.3 Identification and development of submodels for alternative testing purposes.

305.4 Completion of technical report to describe the UGSM as applied to NCTCOG.

305.5 Development of regression and analysis to further refine the correlation of variables affecting development patterns, including regression analysis of sewer and water infrastructure.

305.6 Development of a research effort to monitor the state of modeling procedures as applied to the planning process (such as land use modeling, regional population modeling, etc.).

305.7 Development of data bank to contain all data sets regional in application.

305.8 Development of interactive computer capability for research and display purposes to supplement batch-processing capability.

305.9 Continued refinement and geocoding of DIME computer file in association with the Bureau of the Census (to assist, for example, in identifying the number of multi-family units in apartment complexes).

Product: 1. Operational Urban Growth Simulation Model recalibrated for 1970-1975 period.

Staffing: These tasks will be accomplished under the direction of an interdepartmental task force of NCTCOG staff, including representatives from the Department of Water Resources. Work under this activity is the responsibility of the Department of Management and Planning Coordination.

Relationship to Grant Application: This activity is included as a portion of Task 2.271 of the grant application.

ACTIVITY 310 DEVELOP AND MAINTAIN TECHNIQUES TO ESTIMATE SEWAGE FLOWS AND LOADS

Objectives: To develop within NCTCOG a capability to estimate existing and future sewage flows and pollutant loads by small area based on output from the Urban Growth Simulation Model, and to maintain awareness of emerging technologies.

Previous and Ongoing Work: In previous wastewater studies in the region, consultants have generally projected future population, applied a general coefficient for sewage flow per person, and arrived at projected sewage flows. In the same studies, sewage pollutant load factors for selected parameters have also been identified and applied per person to project sewage pollutant loads. Seldom, if ever, has a computer been needed or utilized in this task.

A preferable technique has emerged as part of the solid waste study conducted under EPA funding. Solid wastes quantities are generated on a per-person basis for residential and total waste and on a per-employee basis for commercial and industrial waste. This method has been accepted by the participating members of NCTCOG and the principles will be applied in this program.

Scope of Work and Methodology: Within Contract D, Point Source Analysis, the consultant will develop a methodology and derive pollutant load factors for specified parameters from historical records to project sewage flow and loads based on small area demographic data developed by NCTCOG through the Urban Growth Simulation Model. As a minimum, sewage flows will be estimated individually by the following categories: (a) residential; (b) commercial; (c) industrial; and (d) infiltration/inflow.

The methodology will be computer-based. Because of the need to maintain a continuing capability to generate sewage flows and loads as new population and employment estimates are made, NCTCOG staff within the Departments of M&PC and Water Resources will work with the consultant to put the system on NCTCOG-accessible computer systems. As alternative regional development impacts are generated in Element 400, sewage flow and load estimates will be made.

Product: 1. Operational computer program to estimate sewage flows and loads by category based on output from the Urban Growth Simulation Model.

affing: Work under this activity is the responsibility of the Staff Engineer of the Department of Water Resources.

ionship to Application: This activity includes a portion of Task 2.9 of the grant application.

ACTIVITY 315 ASSIST IN DEVELOPMENT AND MAINTAIN TECHNIQUES TO ASSESS NONPOINT SOURCES

Objective: To develop within NCTCOG a capability to estimate by small area existing and future impacts of nonpoint sources of pollution for certain parameters for urban areas based on output from the Urban Growth Simulation Model, and for nonurbanized land uses from Activity 220, and to maintain awareness of emerging technologies.

Previous and Ongoing Work: Based on a brief review of past efforts in the North Central Texas region, it appears that little work has been conducted on identifying the magnitude and points of impacts of urban or rural runoff.

Scope of Work and Methodology: Within Contract G, Nonpoint Source Studies, which includes multiple arrangements with several groups, these agencies and consultants will assess the current impacts of construction runoff, urban stormwater runoff, solid waste disposal, septic tanks, and agricultural, silvicultural, and mining activities for certain parameters. These agencies and consultants will also work with the NCTCOG staff in identifying techniques for estimating the future impacts of these nonpoint sources using data produced for target years by the Urban Growth Simulation Model for urban areas and by Activity 220 for nonurbanized areas.

Under this activity, the NCTCOG staff will work with these agencies and consultants to ensure that NCTCOG will have continued capabilities for assessing these runoff impacts as alternative regional development patterns are generated in Element 400.

Product: See Contract G, products G-VII and VIII for operational tools to assess major nonpoint source impacts.

Staffing: Work under this activity is the responsibility of the Staff Biologist of the Department of Water Resources.

Relationship to Grant Application: This activity includes a portion of Tasks 2.14, 2.15, 2.16, 2.17, and 2.18 of the grant application.

ACTIVITY 320 ASSIST IN DEVELOPMENT AND MAINTAIN TECHNIQUES TO ASSESS ALTERNATIVE WASTE LOAD ALLOCATIONS IN STREAMS AND EUTROPHICATION IN LAKES

Objective: To develop within NCTCOG a capability to utilize techniques developed by the Texas Water Quality Board in Contract B and others to test the steady-state and nonsteady-state water quality response of selected parameters of the Trinity River main stem and major tributaries to alternative waste load allocations for point and nonpoint sources, and eutrophication in Lake Ray Hubbard or other lakes, and to maintain awareness of emerging technologies.

Scope of Work and Methodology: In Contract B, the Texas Water Quality Board is further calibrating and improving a steady-state stream model which can simulate, for selected parameters, water quality response in selected stream segments of treatment plant discharges. Under this activity, the NCTCOG staff will work with the TWQB and ensure that the model input format is compatible with the types of sewage flow and load and runoff output to be produced by techniques developed in Activities 310 and 315. The NCTCOG staff will also be trained to use the TWQB model.

Under Contract F, Impact Assessment, the consultant will assist NCTCOG staff and the Task Force on Stream Modeling in evaluating continuous stream modeling activities of the TWQB also under Contract B, the City of Dallas under a separate U.S. Department of Interior study, and others during the 1976-77 annual planning cycle. Based on that evaluation, the appropriate continuous stream modeling technique will be selected for use in the testing of alternative areawide water resources management strategies in Element 400.

The techniques and methods to be applied for assessing eutrophication in Lake Ray Hubbard will be identified through Contract J and coordinated in this activity with such other activities as the proposed study by the Corps of Engineers on flood plain management in Rowlett Creek.

Product: See Contract B, products B-II and B-III for operational computer programs for steady-state stream models and nonsteady-state stream models of the Trinity River main stem and major tributaries, and Contract J, products J-II and J-IV for Lake Ray Hubbard eutrophication assessment program.

Staffing: Work under this activity is the responsibility of the Staff Biologist of the Department of Water Resources.

Relationship to Grant Application: This activity includes a portion of Tasks 2.3, 2.8, 2.9, 2.22, 2.25, 2.27, 2.28, and 2.32 of the grant application.

ACTIVITY 325 ASSIST IN DEVELOPMENT AND MAINTAIN TECHNIQUES TO ASSESS AREAWIDE COST, AIR QUALITY, ENERGY, AND RESIDUAL IMPACTS OF ALTERNATIVE AREAWIDE WATER RESOURCES MANAGEMENT STRATEGIES

Objective: To develop within NCTCOG a capability to estimate the costs, air quality impacts, energy impacts and sludge or residuals impacts of alternative areawide water resources management strategies to be identified in Element 400, and to maintain awareness of emerging technologies.

Previous and Ongoing Work: Generally in the past, consultants have been engaged by local governments and agencies to assess the impacts of alternative treatment works, with particular attention to costs. The methods used by these consultants vary from jurisdiction to jurisdiction depending on assumptions regarding life of the treatment works, discount rate, length of construction or planning period, and other factors. Little if any work has been accomplished in the North Central Texas region on the monetary costs or savings to the consumer of such alternatives as water-saving devices in new homes or controls on urban stormwaters.

Areawide air quality planning is currently the responsibility of the State-level Texas Air Control Board including preparation of the State Implementation Plan and related air quality maintenance planning. Both the Cities of Dallas and Fort Worth receive annual Federal grants from the U.S. Environmental Protection Agency to support their local air pollution control programs. The NCTCOG Department of Transportation has recently utilized a submodel of the Urban Growth Simulation Model to estimate total daily emissions of air pollutants by all ground transportation sources within the Intensive Study Area for transportation system alternatives in 1990. In the late 1960's, NCTCOG also developed model air pollution ordinances which have been adopted by many local governments.

The State has established a Governor's Energy Advisory Council to assist in assessing the energy resource needs of the State. The Council has recently published a series of reports on the impacts on air quality and water quality of alternate strategies for production, distribution and utilization of energy in Texas from 1974 to 2000. The NCTCOG Department of Transportation has utilized a submodel of the Urban Growth Simulation Model to estimate the energy consumption (including both gasoline and electrical energy) in British Thermal Units of alternate transportation systems in 1990. Fuel needs were also assessed as part of NCTCOG Solid Waste Study during 1974.

Under a grant from EPA, NCTCOG developed and is applying a sophisticated computer-based model to analyze the cost effectiveness of alternative solid waste processing facilities including sanitary landfills, transfer stations, and so forth for use in local planning and regional planning.

Scope of Work and Methodology: In Contract D, Point Source Analysis, the consultant is compiling available field data and calculating the impacts expected as a result of implementing the 1977 Facilities Program for air quality emissions, energy, capital and O&M cost, and sludge. Under this Activity 325, the NCTCOG with the assistance of the consultant performing Contract F, Impact Assessment, will identify or develop and maintain tools, techniques and methodologies for assessing the areawide cost, air quality, energy, and residual impacts of alternative areawide water resources management strategies. The purpose is to ensure that NCTCOG has continued capability to address these impacts beyond the initial Federal grant.

The approach will stress the interrelationship of various functional programs such as transportation and water resources and then associated areawide impacts. Techniques developed by the Texas Air Control Board and others for air quality dispersion modeling will be evaluated. The consultant performing Contract F will assist the NCTCOG staff in combining various energy demands into an Energy Balance for the North Central Texas region. Work in this regard developed by the Metropolitan Washington Council of Governments will be assessed for its applicability to the region. Potential extension of the existing NCTCOG capabilities in systems analysis studies for solid waste disposal will be assessed.

Note that other natural resource, economic, and social impacts will be identified within the work of Contract F as well, but likely involving different methodologies than discussed here.

Product: See Contract F, product F-VII for operational tools and techniques (some of which may be computer-based) for assessing the areawide impacts of alternative areawide water resources management strategies.

Staffing: These tasks will be accomplished under the direction of an interdepartmental task force of NCTCOG staff, including representatives from the Department of Water Resources. Work under this activity is the responsibility of the Planner/Engineer of the Department of Water Resources.

Relationship to Grant Application:	This activity includes a portion of Tasks 2.12, 2.13, 2.20, 2.21, 2.29, 2.30, 2.31, 2.32, and 2.34 of the grant application.

(This work program originally contained Activity 330, Survey Management Program Statewide. As explained under Contract E of the next section, this particular activity and associated contract have been eliminated from further consideration, and therefore have been omitted from this work program.)

ELEMENT 400
IMPACT ASSESSMENT OF ALTERNATIVES

ACTIVITY 405 DEVELOP AND IMPROVE COMPREHENSIVE FRAMEWORK FOR FORMULATING AND TESTING SYSTEMS AND STRATEGIES

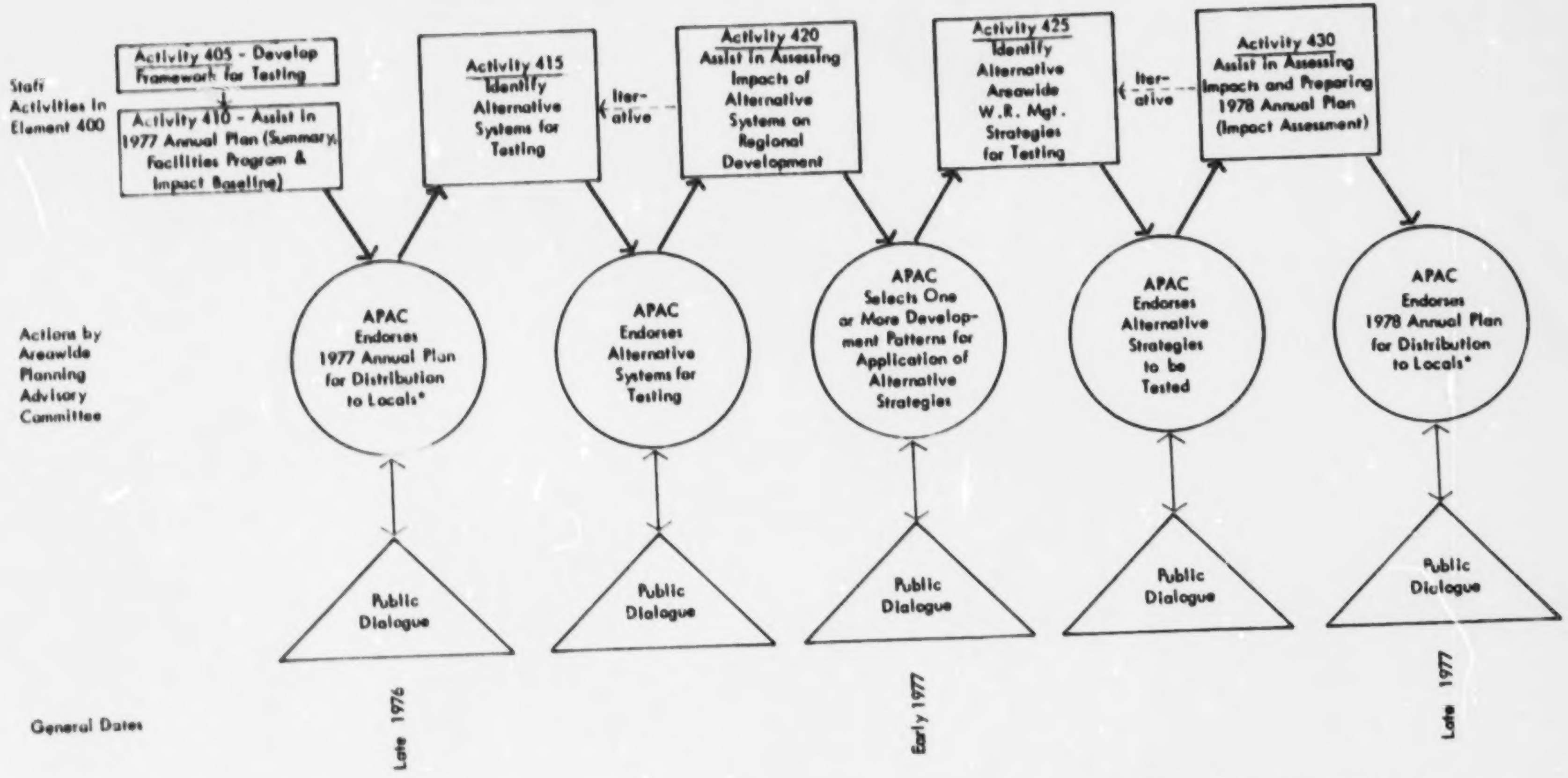
Objective: To develop and continually improve a comprehensive framework for identifying alternative systems, assessing their regional development impacts, grouping alternatives from Contract L into strategies, assessing areawide impacts of these strategies, and displaying the results to local elected officials and citizens such that a Preferred Regional Development Policy can be selected.

Previous and Ongoing Work: At its September 1975 Retreat, the NCTCOG Executive Board approved a process whereby NCTCOG will work with its member governments in evaluating and selecting a Preferred Regional Development Policy (PRDP) for the metropolitan area. In the process of developing a PRDP, the staff will analyze the effects of decisions made in functional mediums - such as transportation or waste treatment service - on the future development of the region using the methodologies developed in Element 300 and data collected in Element 200. The process will involve all major functional departments of NCTCOG and will be the major comprehensive framework for meeting requirements of the U.S. Environmental Protection Agency under Section 208, the U.S. Department of Housing and Urban Development requirements under "701" for a land use element and a housing element, and the U.S. Department of Transportation requirements for metropolitan transportation planning as well as addressing such other major areas of areawide impact as energy and air quality.

Scope of Work and Methodology: An initial framework for developing and testing alternatives towards a Preferred Regional Development Policy has been developed cooperatively by the staffs of the NCTCOG Departments of Management and Planning Coordination, Water Resources, and Transportation. The approach to be utilized by the Department of Water Resources in conducting the Section 208 planning process during the initial two-year planning period is depicted in Figure III-2. Staff activities are described in the remainder of Element 400.

It is expected that continued refinements and improvements to this framework will be required throughout the planning process. The assistance of the consultant performing Contract F, Impact Assessment, will be utilized in this effort. The development and testing of PRDP

FIGURE III-2
PROCESS FOR FORMULATING AND TESTING ALTERNATIVES


Staff Activities In Element 400
Activity 405 - Develop Framework for Testing
Activity 410 - Assist In 1977 Annual Plan (Summary, Facilities Program & Impact Baseline)
Activity 415 Identify Alternative Systems for Testing
Iter-ative
Activity 420 Assist In Assessing Impacts of Alternative Systems on Regional Development
Activity 425 Identify Alternative Areawide W.R. Mgt. Strategies for Testing
Iter-ative
Activity 430 Assist In Assessing Impacts and Preparing 1978 Annual Plan (Impact Assessment)
Actions by Areawide Planning Advisory Committee
APAC Endorses 1977 Annual Plan for Distribution to Locals*
APAC Endorses Alternative Systems for Testing
APAC Selects One or More Development Patterns for Application of Alternative Strategies
APAC Endorses Alternative Strategies to be Tested
APAC Endorses 1978 Annual Plan for Distribution to Locals*
Public Dialogue
Public Dialogue
Public Dialogue
Public Dialogue
Public Dialogue
General Dates
Late 1976
Early 1977
Late 1977

*Plan will be distributed by APAC, reviewed by locals, discussed at public meetings, revised by APAC and recommended for approval, approved by NCTCOG Executive Board, and submitted to State and EPA for approval as provided under 208 regulations.

alternatives is also included as major Work Element 10 of the Department of Management and Planning Coordination Work Program.

Product:

1. Set of vu-graphs showing framework for formulating and testing alternative systems and strategies towards development of a Preferred Regional Development Policy.

See Contract F, products F-I and F-IV for the proposed framework for Impact Assessment.

Staffing:

Work under this activity is the responsibility of the Directors of the Departments of Management and Planning Coordination, Water Resources, and Transportation, and will involve several interdepartmental task forces.

Relationship to Grant Application:

This activity includes portions of Tasks 2.12, 2.13, 2.20, 2.21, 2.29, 2.30, 2.31, 2.32, 2.33, 4.1 and 4.2 of the grant application.

ACTIVITY 410 ASSIST IN PREPARING 1977 ANNUAL PLAN (SUMMARY, FACILITIES PROGRAM, AND IMPACT BASELINE)

Objective:

To assure continued funding and discharge permits by the State and EPA for local wastewater projects by preparing a facilities program and impact baseline which identifies existing facilities and new treatment works and conveyance systems implemented, under construction or identified in Step 1 facilities planning since the previous NCTCOG study; indicates their service areas; evaluates the municipal and industrial treatment works in meeting 1977 and 1983 Federal and State effluent limitations; and assesses the areawide cost, air quality, energy, residual and other impacts of the program.

Previous and Ongoing Work:

A water quality management plan for the Upper Trinity River Basin, within which the Section 208 metropolitan designated planning area is located, was developed and approved by the NCTCOG in the early 1970's. It is the approved regional plan as certified by the Texas Water Quality Board, the Governor of Texas, and the U.S. Environmental Protection Agency under the former 18 CFR regulations. The adopted Upper Trinity River Basin Comprehensive Sewerage Plan includes:

Volume 1 - (Engineering) Report, completed July, 1970, and approved by NCTCOG in August, 1971, as amended for the East Fork in May, 1973

Volume 2 - (Engineering Report) Appendix, completed July, 1970

Volume 3 - Management and Finance Program, approved December, 1971. A summary of the program was also prepared.

Volume 4 - Environmental Assessment, May, 1972

and an "Upper Trinity River Basin Water Quality Monitoring Plan" prepared by TRA for NCTCOG and completed in July, 1970

The facilities program portion of the plan in Volume 1 consists of two components:

1. A metropolitan system centralized primarily in the Dallas-Fort Worth area, and

2. A regional system for outlying communities with independent systems.

Implementation of the facilities program is by stages:

1. Initial (by 1975);

2. Future Stage 1 (by 1990); and

3. Future Stage 2 (by 2020).

The environmental assessment presents the alternative systems considered, a detailed comparison of costs, and some limited information on their natural resource impacts.

In 1974, the Trinity River Authority prepared a Water Quality Management Plan for the Trinity River Basin under Section 303(e) of the Act. In addition, there are numerous Step 1 facilities planning projects currently underway by local governments and agencies in the region.

Scope of Work and Methodology: To ensure the uninterrupted flow of EPA grant monies and approval of discharge permits for local wastewater projects, the NCTCOG staff will work with the consultants performing Contract D, Point Source Analysis, and Contract F, Impact Assessment, in preparing a 1977 Annual Plan consisting of a Facilities Program, an Impact Baseline on that program and a summary. The Description of the Planning Process (1976-77) is prepared in Activity 125. As opposed to the remainder of Element 400 where alternatives are identified and compared in detail, the 1977 Facilities Program from this activity will be limited to those facilities for which decisions have already been made or are being made under ongoing Step 1 facilities planning studies. The 1977 Facilities Program will thus be an updating of the NCTCOG plan of the early 1970's. However, this facilities program will be evaluated in detail regarding its ability to meet national 1977 and 1983 effluent limitations for municipal and industrial treatment works, and State objectives, in Contract D. Programmed service areas will also be identified.

The 1977 Impact Baseline, although not assessing alternative treatment works and conveyance systems as will later activities in Element 400, will address many new topics. The areawide primary and "secondary" air quality and energy impacts of the facilities program will be assessed by the NCTCOG staff and the consultant performing Contract F, Impact Assessment, using data provided by the consultant performing Contract D and from other NCTCOG functional programs. The sludge and other residual impacts will also be addressed, as will the anticipated costs to the operators and the consumers. The draft documents will be submitted to the Areawide Policy Advisory Committee for authorization to distribute for local government review. The approval process in Activity 125 will then be used to seek State certification and EPA approval of them.

Product:

Ia. Preliminary draft summary of 1977 Annual Plan (by NCTCOG Staff).

Ib. Summary of 1977 Annual Plan.

See Contract D, product D-I, and Contract F, product F-II for the 1977 Facilities Program and 1977 Impact Baseline, respectively. The 1977 Annual Plan will be submitted to EPA under the formal review and approval procedures of Activity 125, where the "Description of the Planning Process" is prepared.

Staffing:

Work under this activity will be the responsibility of the Staff Engineer and Planner/Engineer of the Department of Water Resources, and will involve the active participation of other NCTCOG departments.

Relationship to Grant Application:

This activity includes portions of Task 2.1, 2.6, 2.10, 2.11, 2.12, 2.13, 2.29, 2.23, 4.1, and 4.2 of the grant application.

ACTIVITY 415 IDENTIFY ALTERNATIVE SYSTEMS FOR WASTE TREATMENT CAPACITY AND SEWAGE SERVICE FOR TESTING

Objective: To identify the characteristics of waste treatment capacity and sewage service alternatives, such that the regional development impacts of these alternatives (combined with programmed water supply and transportation systems) can be tested in Activity 420.

Previous and Ongoing Work: As a result of the transportation planning process conducted by NCTCOG during 1974, a multimodal transportation system plan for 1990 has been approved. During this process, a series of alternative transportation systems were tested for their regional development impacts (and other social, economic, and natural resource impacts) using the Urban Growth Simulation Model described in Activity 305.

In addition, NCTCOG developed and approved during 1974 a regional water supply study which identifies needed water supplies and facilities over a considerable time span.

Scope of Work and Methodology: The existing and programmed sewage service area and waste treatment capacity of the metropolitan region over the short-range will have been identified in Activity 410. As indicated in Figure III-2, this Activity 415 will involve the identification and characterization of alternative systems for waste treatment capacity and sewage service, particularly over the long-range time period required by the Act. The watershed will be a basic unit for this identification. Note that these alternative systems will be somewhat "conceptual", will specifically address the capacity but not the sites of treatment works, and will not address the quality of effluent generated by these treatment works within this activity.

Only those characteristics of alternative systems believed to have an impact on where development will or will not accur will be identified in this activity. It is believed that whether treatment works operate at a secondary treatment level or at an advanced treatment level has no direct influence on the distribution of regional development. These issues are obviously of concern regarding improved water quality, and will be addressed in Activities 425 and 430.

Figure III-3 has been prepared to illustrate examples of the alternative systems that might be identified for testing in a given target year. The actual selection of systems for testing will be made by the appropriate

FIGURE III-3
EXAMPLE ALTERNATIVE SYSTEMS FOR TESTING IN 1990

	Waste Treatment Capacity and Sewage Service	Water Supply and Service	Transportation Plan
System A	Plants and Interceptors Operating and Under Construction in 1975	Supplies and Facilities in Service in 1975	Adopted 1990 Transportation Plan
System B	Recommended Regional System in 1977 Facilities Program	Supplies and Facilities Recommended in Adopted Regional Water Supply Study	Same
System C	More Than Recommended Regional System	Same	Same

Note: Actual Alternatives for Testing will be Identified by Appropriate NCTCOG Policy Committees

NCTCOG policy committees. In the case of water resources alternatives, the committee responsible is the Areawide Planning Advisory Committee (APAC).

Product: Briefing documents describing alternative systems for waste treatment capacity and sewage service for specific target years (involving an iterative process with Activity 420, impact assessment) presented to the APAC and/or appropriate subcommittees.

Staffing: Work under this activity will be the responsibility of the Staff Engineer of the Department of Water Resources and will involve the active participation of other NCTCOG departments.

Relationship to Grant Application: This activity includes portions of Tasks 2.6, 2.10, and 2.29 of the grant application.

ACTIVITY 420 ASSIST IN ASSESSING IMPACTS OF ALTERNATIVE SYSTEMS ON REGIONAL DEVELOPMENT

Objective: To estimate and compare the magnitude and distribution of population, employment, sewage flows and loads, and runoff in target years by watershed by testing alternative systems from Activity 415 using tools developed in Element 300 and data collected in Element 200.

Previous and Ongoing Work: Within Element 300, certain tools will be developed to assist NCTCOG in performing this assessment. These methodologies include the Urban Growth Simulation Model (UGSM) from Activity 305, the technique for estimating sewage flows and pollutant loads from Activity 310, and the methods for estimating nonpoint source runoff from Activity 315. The UGSM has been used successfully by the Department of Transportation during 1974 to test the regional development impacts of alternative transportation systems for the target year 1990. Data collected in Element 200, particularly in Activities 220 and 230, will also be used in this assessment.

The alternative systems to be tested will be identified in Activity 415.

Scope of Work and Methodology: The use of the Urban Growth Simulation Model to test the regional development impacts of alternative systems is included within Work Element 10 of the Department of Management and Planning Coordination Work Program. Activity 305 includes the continued maintenance and improvement of the UGSM for alternative system testing. The UGSM will produce as output the magnitude and distribution of population and employment by small area for the target years.

The Department of Water Resources with the assistance of appropriate consultants will then use the tools from Activities 310 and 315 to produce estimates of sewage flow and pollutant loads by watershed and/or watershed for the target years. Other impacts may be assessed at this time by the consultant performing Contract F, depending on the revised framework from Activity 405. The results will be presented to the APAC for its consideration. It is expected that an iterative process will be utilized whereby the staff identifies alternative systems in Activity 415, regional development impacts are assessed by the consultants and staff in Activity 420 and presented to the APAC and/or its appropriate subcommittee who in turn identifies other alternative systems for testing.

From this iterative process will emerge endorsement by the APAC of one but more likely more than one alternative system and associated regional development impacts for application of alternative water resources management strategies in Activity 425. This will only be an interim identification subject to reconsideration when Activities 425 and 430 reveal the full range of impacts of alternative systems and strategies. This identification of future population and sewage characteristics is required, however, by the EPA as an "interim output".

Product: See Contract F for briefing documents describing regional development impacts of alternative systems (including an iterative process with Activity 415) presented to APAC and/or appropriate subcommittees concluding with F-III, Summary. This summary will include the required population and/or land use and sewage flow and load "interim outputs" requested by EPA.

Staffing: Work under this activity will be the responsibility of the Department of Management and Planning Coordination for assessing population and employment impacts and the Department of Water Resources for assessing sewage flow and load and runoff impacts.

Relationship to Grant Application: This activity includes portions of Tasks 2.5 and 2.271 of the grant application.

ACTIVITY 425 IDENTIFY ALTERNATIVE AREAWIDE WATER RESOURCES MANAGEMENT STRATEGIES FOR TESTING

Objective: To identify the characteristics of alternative water resources management strategies for appropriate target years, such that the economic, social, and natural resources impacts of these alternative strategies can be assessed in Activity 430.

Previous and Ongoing Work: It appears that the current strategy for improving water quality within the metropolitan area, as reflected in past NCTCOG and Trinity River Authority studies, is the upgrading of existing treatment works and the construction of new treatment works to a high or "advanced" degree of treatment beyond the Federal minimum effluent limitations and the discharge of this effluent into the Trinity River and its tributaries.

Although the consultant in Contract D, Point Source Analysis, will address the current status of other techniques such as treatment and recycling, and treatment and land application. These structural techniques do not appear to be in significant use within the region. Likewise, management and regulatory techniques such as the installation of water-saving toilets and showerheads in new construction or the control of sediment runoff from construction sites through retention ponds do not appear to be in use in the region.

Scope of Work and Methodology: Under this activity the NCTCOG staff with the assistance of the consultants performing Contracts F, L, and M will identify a broad range of water resources management strategies which combine both structural and management/regulatory control mechanisms. This is illustrated in Figure III-4.

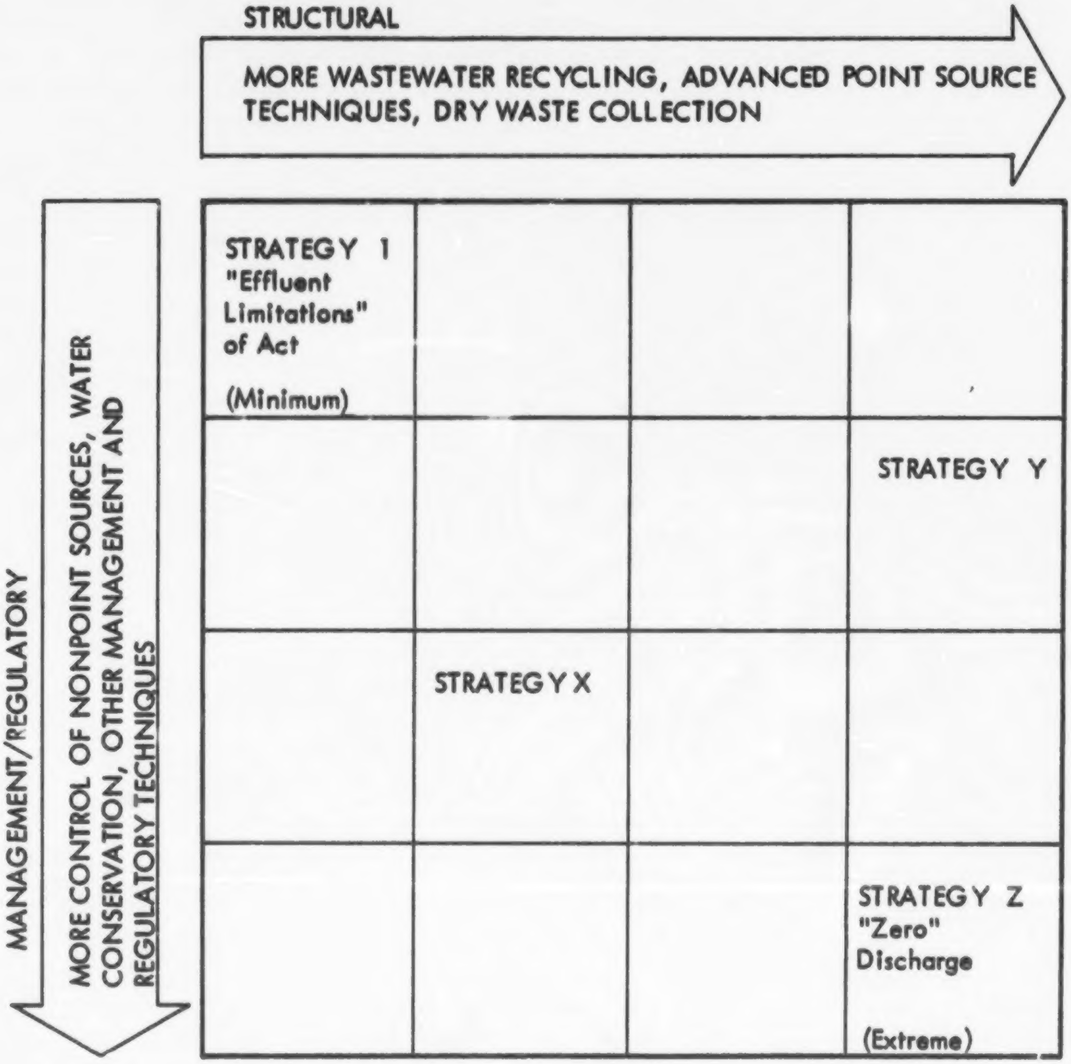
In accepting responsibility for conducting the areawide waste treatment management planning process, the local governments and agencies of the region have pledged to work, through the preparation of an implementable plan, toward the goals of the Act. In doing so, control of the plan content remains in the hands of the local elected officials in the region. The two most significant national goals in the Act are:

1. That "wherever attainable" by 1983, water quality will have improved enough to allow the propagating of fish, and recreation in and on the waters.

2. That by 1985, all discharge of pollution into navigable waters will have been eliminated.

FIGURE III-4

AREAWIDE WATER RESOURCES MANAGEMENT STRATEGIES FOR TESTING TOWARDS ACHIEVEMENT OF SWIMMABLE/FISHABLE WATERS


STRUCTURAL
MORE WASTEWATER RECYCLING, ADVANCED POINT SOURCE TECHNIQUES, DRY WASTE COLLECTION
MANAGEMENT/REGULATORY
MORE CONTROL OF NONPOINT SOURCES, WATER CONSERVATION, OTHER MANAGEMENT AND REGULATORY TECHNIQUES
STRATEGY 1 "Effluent Limitations" of Act (Minimum)
STRATEGY Y
STRATEGY X
STRATEGY Z "Zero" Discharge (Extreme)

Although the dates for attainment of these goals may be the subject of further discussion within Congress, the goal of "swimmable/fishable" waters is the water-quality-related objective against which alternative areawide water resources management strategies will be tested in Activity 430.

As Figure III-4 indicates, there are various ways to combine structural measures and management/regulatory measures into strategies. Based on current Federal regulations, there is apparently a minimum and an "extreme" strategy which could be considered in meeting the Act's goals. The minimum strategy is treatment works which achieve only the "effluent limitations" of the Act with very little if any attention to introduction of management/regulatory measures. Based on previous analyses of water quality in the region, this strategy would not achieve the swimmable/fishable goals and, indeed, current permits for area treatment plants require an effluent quality higher than the minimum Federal limitations. This strategy does, however, provide a minimum strategy for addressing water quality improvement.

On the other end of the scale, as indicated in Figure III-4, would be the extreme strategy of meeting the strict (and unenforceable) interpretation possible of the national goal of "zero" discharge. In this case the zero discharge strategy would combine the highest (and perhaps not yet developed) technology for point source control with extremely stringent regulatory controls on all forms of nonpoint sources of pollution such that pollutant loads to the area's water bodies would be "zero". This would undoubtedly be termed the extreme and unrealistic strategy.

Somewhere between these two boundary conditions of minimum and extreme will hopefully be a strategy which meets not only the water quality needs of the region but also the region's social, economic, and natural resources objectives. Under this Activity 425, the NCTCOG staff and its consultants will identify alternative water resources management strategies for testing in Activity 430 towards meeting these objectives. Techniques developed at the Metropolitan Washington Council of Governments (Spooner, Promise, Graham, 1975) will be utilized.

The characterization of these alternative strategies must be specific enough that areawide impacts can be associated with them in Activity 430, but cannot be so detailed that this activity cannot be accomplished within the timing and budget constraints. For each strategy the expected degree of reduction of sewage pollutant load and runoff load from the amounts generated in Activity 420 will be identified and used as the so-called "waste load allocation" for testing of water quality response in Activity 430. Although called "areawide" strategies, the control techniques will have to be tailored to the specific geographical subareas within the region, such as major watersheds.

As with the previous activities in this element, it is expected that an iterative process will be utilized whereby the staff, with consultant assistance, identifies alternative strategies; the APAC approves the strategies for testing; the social, economic, and natural resources impacts are assessed in Activity 425 with consultant involvement, and presented to the APAC, who in turn identifies other strategies or further defines these strategies for testing. As these strategies are further defined and narrowed down, possible "implementation programs" associated with the strategies will be identified.

Product: Briefing documents describing alternative areawide water resources management strategies (including an iterative process with Activity 430, impact assessment) presented to the APAC and/or appropriate subcommittees.

Staffing: Work under this activity will be the responsibility of the Director of Water Resources and will involve the active participation of other NCTCOG departments.

Relationship to Grant Application: This activity includes portions of Tasks 2.11, 2.19, 3.4 and 4.1 of the grant application.

ACTIVITY 430 ASSIST IN ASSESSING ECONOMIC, SOCIAL, AND NATURAL RESOURCES IMPACTS OF ALTERNATIVE STRATEGIES AND PREPARING 1978 ANNUAL PLAN (IMPACT ASSESSMENT INCLUDING ALTERNATIVE IMPLEMENTATION PROGRAMS)

Objective: To assess the economic, social, and natural resources impacts of alternative areawide water resources management strategies from Activity 425 in appropriate target years using tools developed in Element 300 and data collected in Element 200, and to prepare the 1978 Annual Plan.

Previous and Ongoing Work:

Within Element 300, tools needed by NCTCOG in performing part of this assessment will be developed. This includes techniques from Activity 320 to model the receiving stream's water quality reponse to alternative waste load allocations from Activity 425, and techniques from Activity 325 for assessing the areawide cost, air quality, energy and residual impacts of alternative strategies. Data collected in Element 200, particularly in Activities 220 and 225, will also be used. Note also that the alternative systems assumed from Activity 415 and their regional development impacts identified in Activity 420 will be incorporated into the assessment conducted in this activity.

Scope of Work and Methodology:

The Impact Assessment consultant in Contract F, the other consultants, and the staff will use the tools and data developed in previous activities to assess the impacts of each strategy and to compare these strategies using as a guide the framework developed in Activity 405. This process of identifying strategies in Activity 425 and assessing impacts in this activity will be performed iteratively over a considerable span of time. As the alternative strategies are narrowed, more detail as to the structural and management/regulatory measures actually included in each strategy will become better defined. Within this activity the necessary management agencies to employ these measures will be identified.

Capital and operating maintenance costs of any structural measures as well as the cost to the consumer will be assessed. Tools from Activity 325 to assess not only the primary air quality impacts of water-related structural measures, but also the "secondary" air quality impacts as a result of the transportation patterns from Activities 415 and 420 will be exercised. The impacts on energy demand and supply and from "sludge" or any residuals from structural measures will be assessed. Other impacts as well will be assessed under Contract F.

From this iterative process will emerge the draft 1978 Impact Assessment which embodies several alternative water resources management strategies and associated implementation programs and presents a better understanding of the costs and benefits of moving towards swimmable/fishable national goals as well as significant issues for consideration by the region's local elected officials. This will be submitted for endorsement by the APAC to distribute for local government review and approval steps in Activity 125. At this time, the APAC may or may not identify a "preferred" implementation program.

After review and recommendations by local governments and public meetings under Activity 125 and further consideration by the APAC, the NCTCOG Executive Board will identify a preferred implementation program. The final 1978 Annual Plan, consisting of the 1978 Impact Assessment with the preferred implementation program as part thereof, and the Description of the Planning Process (1977-78) from Activity 125, after endorsement by the NCTCOG Executive Board, will be submitted for state and EPA certification and approval.

Product:	See Contract F for briefing documents describing areawide impacts of alternative water resources management strategies (involving an iterative process with Activity 425) presented to the APAC and/or appropriate subcommittees. This will conclude with F-IVa., draft 1978 Impact Assessment including alternative implementation programs. The 1978 Annual Plan consisting of this material will be submitted to EPA under the formal review and approval procedures of Activity 125.
Staffing:	Work under this activity will be the responsibility of the Director of Water Resources and will involve the active participation of other NCTCOG departments.
Relationship to Grant Application:	This activity includes portions of Tasks 2.12, 2.13, 2.20, 2.21, 2.28, 2.29, 2.30, 2.31, 2.32, 2.34, 3.4, 4.1, and 4.2 of the grant application.

What Contract Services are Needed . . .

It is anticipated that NCTCOG will need the assistance of various organizations and agencies through contract services in coordinating the continuing planning process and preparing the annual plans. These organizations and agencies may include professional consulting firms, the Texas Water Quality Board, local general purpose governments, special purpose agencies such as the Trinity River Authority, or even the Federal government.

Figure III-5 indicates the contracts which NCTCOG intends to enter into with these various agencies and their general timing. Following the format of the previous section, each of these contracts is described briefly below. Note that the detailed approach to be used in accomplishing the objectives of each contract will be negotiated during the consultant selection process. This selection process is discussed in the final chapter of this report.

CONTRACT A STATE COORDINATION AND ADMINISTRATION

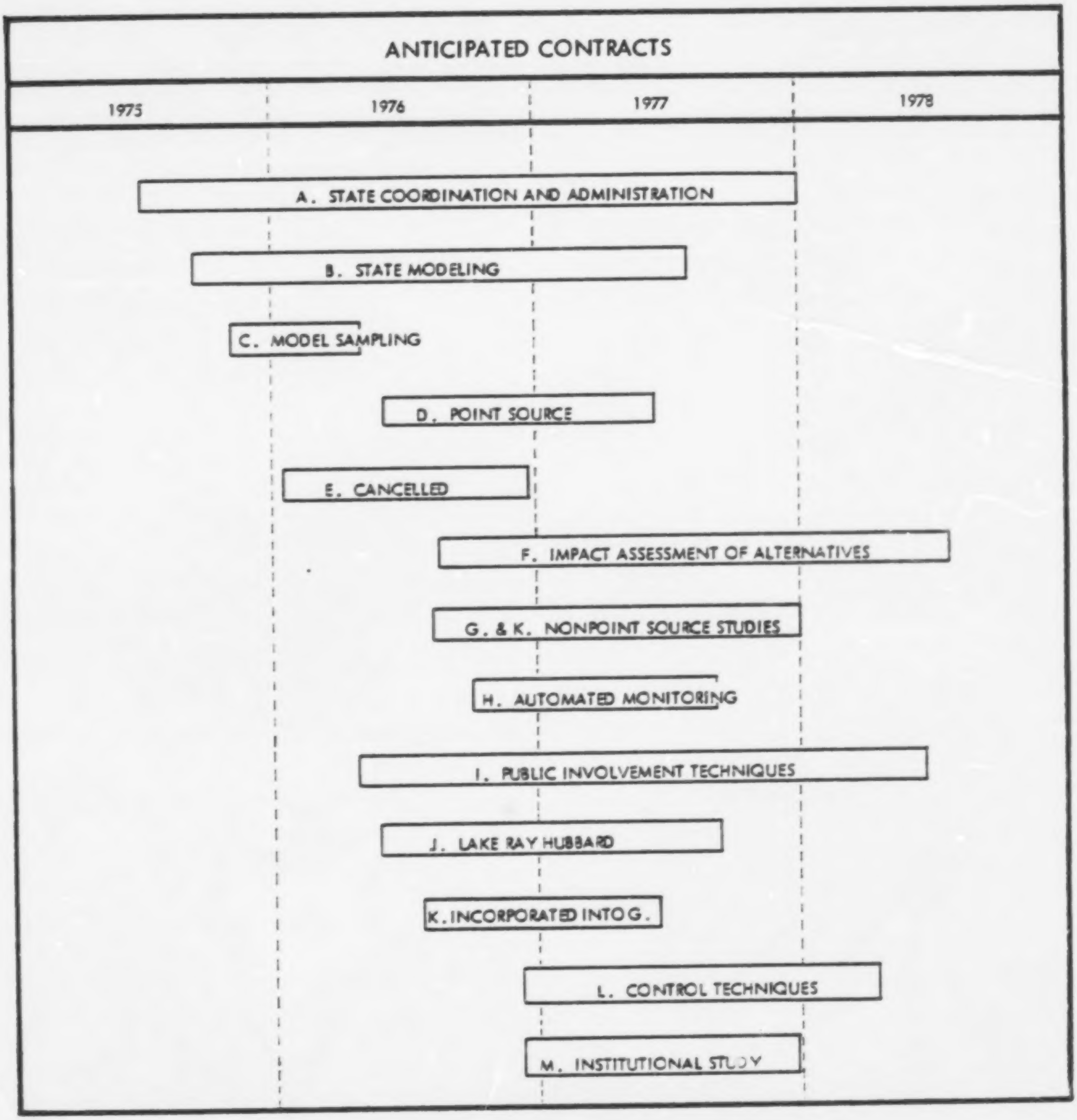
Objective: To ensure that the plan will meet State and Federal guidelines and regulations by engaging the Texas Water Quality Board (TWQB) to provide liaison between NCTCOG and EPA and to monitor the progress of the areawide plan.

Previous and Ongoing Work: It is the intent of the Texas Water Quality Board to enter into a comparable contract with all designated areawide waste treatment management planning agencies in the State. The Governor of the State has responsibility for certifying the annual plan for submission to the U. S. Environmental Protection Agency. Responsibility for monitoring the progress of the annual planning rests with the TWQB.

Scope of Work and Methodology: On September 23, 1975, the TWQB and NCTCOG entered into a contract whereby, for a sum not to exceed $80,000, the TWQB will:

1. Provide technical assistance to NCTCOG;
2. Review and monitor the planning process for compliance with both State guidelines and EPA requirements;
3. Review and comment upon the progress reports submitted by NCTCOG to EPA to assure that the necessary work has been completed and is satisfactory to the State;

FIGURE III-5


ANTICIPATED CONTRACTS
1975
1976
1977
1978
A. STATE COORDINATION AND ADMINISTRATION
B. STATE MODELING
C. MODEL SAMPLING
D. POINT SOURCE
E. CANCELLED
F. IMPACT ASSESSMENT OF ALTERNATIVES
G. & K. NONPOINT SOURCE STUDIES
H. AUTOMATED MONITORING
I. PUBLIC INVOLVEMENT TECHNIQUES
J. LAKE RAY HUBBARD
K. INCORPORATED INTO G.
L. CONTROL TECHNIQUES
M. INSTITUTIONAL STUDY

4. Act as a liaison between NCTCOG and all applicable State and Interstate agencies; and

5. Act as liaison with EPA on matters relative to the grant.

The TWQB has appointed Mr. William D. Evans as State Areawide Planning Coordinator for our region.

Product: Performance of the services and tasks prescribed by the contract as identified above.

Staffing: Supervision of this contract is the responsibility of the Director of Water Resources within Activity 110.

Relationship to Grant Application: This activity is identical to Project Task O, State Coordination and Administration, of the grant application.

CONTRACT B STATE MODELING

To acquire of the Texas Water Quality Board (TWQB) technical assistance for mathematical modeling of stream water quality response in the Trinity River main stem, East Fork, West Fork, Elm Fork and certain other segments for selected parameters.

Previous and Ongoing Work: The TWQB has been engaged in stream water quality modeling in areas throughout the state for several years, and has developed sophisticated steady-state models such as QUAL-1 and QUAL-2. The TWQB is also using a steady-state model developed for the Trinity River Authority for segment 0805. It is the intent of the TWQB to provide technical assistance to all designated areawide waste treatment management planning agencies for stream modeling, and to perform such modeling for significant streams in the nondesignated portions of the State as needed.

Scope of Work and Methodology: The TWQB will operate steady-state models for coliforms on Segment 0805, for BOD/DO and coliforms on Segment 0819 and for BOD/DO on Segment 0822; and nonsteady-state models for BOD/DO on Segment 0822, and for BOD/DO and coliforms on Segments 0805, 0806, and 0819. All inputs will be provided by NCTCOG using the tools developed in Activities 310 and 315. The format of the output from the steady-state models will be a plot of parameter concentration versus river kilometers (and miles) along with a listing of computed values. For the nonsteady-state models the output will be time plots of concentration and flows at various stream points, with the possibility of additional format syles to be developed by TWQB and NCTCOG staff. The models will be utilized by the NCTCOG staff in Activities 320 and 430.

Periodic meetings of the staffs of TWQB, City of Dallas, TRA, other operators, and NCTCOG, and of the 208 Technical Subcommittee Task Force on Stream Modeling will be held to evaluate the progress of the TWQB modeling efforts as well as the City of Dallas' development of a nonsteady-state model of flow quantity and quality for the same stream segments under a grant from the U.S. Department of the Interior. On or about nine months into the contract, the results of these nonsteady-state models will be analyzed by NCTCOG, TWQB, and the Task Force on Stream Modeling to determine their capability to predict water quality.

Product:

I. Report specifying the data required to enhance the utility of existing stream quality models for the agreed-upon stream segments and parameters.

II. Compiled executable version of the steady-state models on tape and a user manual with sample run setups complete with job control language.

III. Compiled executable version of the uncalibrated nonsteady-state models on tape and a user manual with sample run setups complete with job control language.

IV. Documentation report on each of the model types used.

- Up to forty (40) model runs using the steady-state stream model.
- Up to twenty (20) model runs using the nonsteady-state stream model.
- Simplified analysis of other segments as needed.
- Provision of training in the use of the models to a qualified designee of the staff of NCTCOG.

Staffing: Supervision of this contract is the responsibility of the Staff Biologist of the Department of Water Resources within Activity 320.

Relationship to Grant Application: This contract includes the combination of Tasks 2.22 and 2.24 and a portion of Task 2.8 of the grant application.

CONTRACT C MODEL SAMPLING

Objective: To collect water quality samples in selected stream segments for certain parameters to expand the utility of existing stream models in Contract B, and to perform dye studies to determine time-of-travel of solutes in selected stream segments.

Previous and Ongoing Work: As part of Contract B, the TWQB will identify additional data requirements to expand the utility of existing stream models. The needed data will be collected in this Contract C. These will be composite samples collected at certain intervals throughout a 24-hour cycle. A brief review of data collected by the operators indicates that the needed composite sample data is not presently available. Although dye studies were performed several years ago, two additional dye studies are required at this time.

Scope of Work and Methodology: The Trinity River Authority will serve as the contractor for this work. The TRA is expected to utilize the services of the staffs of other operators interested in participating in this effort. The location of sampling points and type of data required will be recommended by the TWQB and approved by the Task Force on Stream Modeling.

The TRA will engage the services of the U.S. Geological Survey to perform the needed dye studies to determine time-of-travel in selected segments.

All of this work will be conducted during low-flow conditions in the river and tributaries. Coordination of this sampling effort with others required will be performed by NCTCOG staff in Activity 225.

Product:

1. Documentation of the results of the dry-weather stream sampling and dye studies.

Staffing: Supervision of this contract is the responsibility of the Staff Biologist of the Department of Water Resources within Activity 225.

Relationship to Grant Application: This contract includes Task 2.23 and portions of Tasks 2.8 and 2.26 of the grant application.

CONTRACT D POINT SOURCE ANALYSIS

Objective: To engage a professional engineering consulting firm to assist the NCTCOG staff in Activity 410 in the preparation of a 1977 Facilities Program, data needed for the 1977 Impact Baseline, and other tasks associated with point sources of pollution. The 1977 Facilities Program will include a major updating of the adopted Upper Trinity River Basin Comprehensive Sewerage Plan (Volumes 1 and 2).

Previous and Ongoing Work: Under Activity 410 the previous water quality management plans developed by NCTCOG and others were described. Other data sources include the NCTCOG "Regional Water Supply Study" (1974) "Long Range Water Supply Study for the City of Dallas" (1974), the Texas Water Oriented Data Bank, and the operating agencies.

Scope of Work and Methodology: A professional engineering consulting firm will be selected using the procedures for "Procurement of Professional Services" described in the last chapter of this report. The general scope of services for this contract is discussed below. The detailed scope of services and methodology will be negotiated with the successful contractor.

The General Scope of Services for Point Source Analysis includes:

Section I. - Evaluation of the Approved Upper Trinity River Basin Comprehensive Sewerage Plan as Amended.

A. Identify implemented recommendations for treatment works and conveyance systems within the metropolitan designated planning area (208 Study Area)

B. Identify recommendations not implemented

C. Identify changes to recommendations

D. Identify ongoing and completed Step 1 (Facility Planning), Step 2 (Project Plans and Specifications), and Step 3 (Construction) as required by Section 201 of PL 92-500

E. Identify needs for facilities planning, including areas not currently meeting permit requirements

F. Identify the programmed service areas for each sewage treatment plant

G. Develop a computer-based information system containing data collected.

Section II. - Effluent Limitations

A. Evaluation of publicly owned treatment works (POTW) as identified in Section I in meeting the national 1977 and 1983 objectives, and State objectives

B. Evaluation of nonpublicly owned treatment works (NPOTW), i.e., industrial and private, meeting the 1977 and 1983 effluent limitations objectives

C. Prepare preliminary draft 1977 Facilities Program incorporating findings from Section I and II

Section III. - Areawide Impact Inventory

A. Develop baseline data to be utilized by NCTCOG staff and a separate consultant for updating the Environmental Assessment of Upper Trinity River Basin Comprehensive Sewerage Plan, 1972

   - Compile available field data on existing treatment works identified in Section I for air quality emissions, energy, capital and O&M cost, and sludge

   - Estimate effects as a result of implementing the Facilities Program for Section I for these parameters

B. Prepare preliminary working draft paper and incorporate data into information systems

Section IV. - Control Techniques

A. Identify current application, use and/or status, in the North Central Texas region, of wastewater reclamation or reuse, land application, flow and waste reduction measures (including water conservation), sludge disposal, infiltration/inflow analysis and emergency measures (such as during past drought cycles)

B. Discuss state of the art for the type of control techniques from A. above

C. Identify impacts for parameters discussed in Section III for these techniques

D. Prepare preliminary draft working paper

Section V. - Evaluation of Existing Pretreatment

A. Review available data, visit specific industries and complete questionnaires, and evaluate existing extent of pretreatment

B. Prepare preliminary draft working paper

Section VI. - Future Sewage Waste Loads and Flow

A. Select categories by which flows and loads are to be estimated (i.e., residential, commercial, industrial, and infiltration/inflow), identify existing unit values, apply to differing subareas and suggest future unit values in 5-year increments and develop methodologies for projecting flows and loads.

B. Assist NCTCOG staff in refining or modifying the Urban Growth Simulation Model to perform calculations

C. Prepare preliminary draft work paper

Section VII. - Submission of Reports and Meetings

A. Submit requirad preliminary and final draft reports

B. Coordinate work with NCTCOG and assist in presenting drafts to committees

Product:

Ia. Preliminary draft 1977 Facilities Program

Ib. 1977 Facilities Program

IIa. Preliminary draft working paper - Areawide Impact Inventory

IIb. Final draft working paper - Areawide Impact Inventory

IIIa. Preliminary draft working paper - Control Techniques

IIIb. Final draft working paper - Control Techniques

IVa. Preliminary draft working paper - Evaluation of Existing Pretreatment

IVb. Final draft working paper - Evaluation of Existing Pretreatment

Va. Preliminary draft working paper - Sewage Flows and Waste Loads

Vb. Final draft working paper - Sewage Flows and Waste Loads

VI. Operational information storage and retrieval system

Staffing: Supervision of this contract is the responsibility of the Staff Engineer of the Department of Water Resources within Activity 410.

Relationship to Grant Application: This contract includes portions of Tasks 1.7, 2.1, 2.6, 2.9, 2.10, 2.11, 2.12, 2.13 and 2.29, of the grant application.

CONTRACT E STATEWIDE MANAGEMENT SURVEY

The original objective of this statewide contract among the seven designated agencies in Texas was to assist the designated agencies in assessing on a statewide basis the federal, state, and local government legal authority to exercise water quality control mechanisms and the legal basis of conceptual management approaches.

This concept was discussed extensively among the designated agencies and the Texas Water Quality Board from June through December, 1975. At a joint meeting in December, it was mutually decided that not enough of the agencies were still interested in pursuing the contract; therefore, this concept of this contract has been eliminated.

CONTRACT F IMPACT ASSESSMENT

Objective: To engage a professional impact assessment consultant to assist the NCTCOG staff in developing a comprehensive analysis framework, preparing the 1977 Impact Baseline, identifying alternative systems and assessing their impacts on regional development, identifying alternative areawide water resources management strategies and assessing their economic, social and natural resources impacts and preparing the 1978 Impact Assessment including alternative implementation programs, and other related tasks.

Previous and Ongoing Work: The following are some of the studies performed in the 208 area to date which will be utilized as background for this effort:

- The Trinity River Authority's EPA approved Section 303(e) Basin Plan entitled, *Water Quality Management Plan for the Trinity River Basin* completed in June, 1974.

- The Trinity River Authority's Section 3(c) plan entitled, *Trinity River Basin Water Quality Management Plan* completed in July, 1974.

- The EPA approved the *Upper Trinity River Basin Comprehensive Sewerage Plan,* developed by NCTCOG in the early 1970's as amended.

- The *North Central Texas Regional Water Supply Study* completed in 1974, for NCTCOG and participating agencies.

- The *NCTCOG Strategy for Solid Waste Management Report* completed in 1974.

- The NCTCOG *Total Transportation Plan for the North Central Texas Region for 1990,* completed and adopted in 1974.

- *The Effects of Urbanization on Floods in the Dallas, Texas, Metropolitan Area,* completed by the USGS in 1974.

- The U.S. Army Corps of Engineers *Status Report of Environmental Evaluations: Trinity River Project, Texas,* completed in 1975 and numerous *Flood Plain Information Studies* for various watersheds in the area.

- The Water Resources Engineers report to the National Commission on Water Quality entitled, *Water Quality and Environmental Effects of PL 92-500 in the Trinity River Basin* which currently is being finalized.

The Impact Assessment consultant will also work closely with several of the other consultants in the planning program, including Point Source Analysis under Contract D, Control Techniques under Contract L, Institutional Study under Contract M, and State Modeling under Contract B.

Scope of Work and Methodology: The consultant under this contract will have major responsibilities in the areawide planning process. The contract will be concerned with at least five major objectives:

- Develop a framework and methodology for assessing impacts during the planning period, encompassing economic, social, and environmental factors, working with the NCTCOG staff on Activity 405.

- With the NCTCOG staff in Activity 410, prepare an Impact Baseline of the 1977 Annual Plan using input from the Point Source Analysis contract and other NCTCOG programs.

- Identify, evaluate, and operationalize tools, techniques, and methodologies as required by Activity 325 for such factors as areawide energy balance to be used by NCTCOG in assessing the impacts of alternative water resources management strategies.

- Assisting the NCTCOG staff in identifying and presenting for public review the regional development impacts of alternative systems as provided in Activity 420, and the economic, social and environmental impacts of alternative areawide water resources management strategies in Activity 430 as part of NCTCOG's identification of a Preferred Regional Development Policy.

Product:

I. Draft Annotated Outline working paper.

IIa. Draft 1977 Impact Baseline.

IIb. 1977 Impact Baseline.

IIIa. Preliminary draft Tools working paper.

IIIb. Final draft Tools working paper.

IVa. Draft Framework working paper.

IVb. Framework working paper.

- Briefing documents describing regional development impacts of alternative systems (involving iterative process) concluding with F-V, Summary.

V. Draft Summary of regional development impacts, which will include required population and/or land use and sewage flow and load "interim" outputs.

- Briefing documents describing areawide impacts of alternative water resources management strategies (involving iterative process) concluding with F-VI.

VIa. Draft 1978 Impact Assessment including alternative implementation programs.

VIb. 1978 Impact Assessment.

VII. Operational tools for assessing areawide impacts.

Staffing:

Supervision of this contract is the responsibility of the Planner/Engineer of the Department of Water Resources.

Relationship to Grant Application:

This contract includes portions of Tasks 1.7, 2.12, 2.13, 2.20, 2.21, 2.28, 2.29, 2.30, 2.31, 2.32, 3.4, 4.1, and 4.2 of the grant application.

CONTRACT G NONPOINT SOURCE STUDIES

Objective:

To perform a preliminary assessment of water quality in the designated area using existing data; to investigate potential contributors to nonpoint pollution using available data and literature; to identify available analytical methods for assessing major nonpoint sources; to design and conduct a sampling program to further define the nonpoint problems and refine coefficients; and to provide and assist NCTCOG in applying analytical methods to estimate current and future major nonpoint pollution.

Previous and Ongoing Work:

As discussed in Activity 315, it appears that some preliminary work has been conducted on identifying the water quality impacts of nonpoint sources of pollution, much of which is unpublished. Several studies which provide some background for this effort include:

- Watershed studies currently being finalized by the City of Dallas;
- The Water Quality Management Plan for the Trinity River Basin, completed by TRA in June, 1974.
- The Trinity River Basin Water Quality Management Plan completed in July, 1974.

- *Evaporation Data in Texas: Compilation Report, January 1907 - December 1970*, prepared by the Texas Water Development Board;
- Rainfall data from the National Weather Service;
- Hydrologic data from the USGS such as *Basic Data for Urban Hydrology Study, Dallas, Texas, 1967*; *Effects of Urbanization on Floods in the Dallas, Texas Metropolitan Area, 1974*; and *Water Resources Data for Texas*;
- "Flood Plain Information Studies" produced by the Corps of Engineers;
- A study of quantity and quality of runoff in Rowlett Creek Basin by the Corps of Engineers which will be carried out concurrently with the 208 Study; and
- Unpublished data in wet weather study and analyses by the Trinity River Authority, wet weather sampling by the City of Dallas, and data from the Cities of Fort Worth and Arlington.

Scope of Work and Methodology:

The analysis of nonpoint sources can be considered to consist of several parts or steps, each of which will include consultants or agencies under contract. An initial step is to begin monitoring certain water quality parameters continuously at certain sites with automated monitors in order to facilitate the analyses below, and to measure the effect of pollution abatement activities, point and nonpoint, as implemented. This work is to be completed by the U.S. Geological Survey identified under a separate Contract H, Automated Monitoring, described earlier.

Another initial step related to the nonpoint source work is to obtain detailed land use data for 1975 and soils data. The Soil Conservation Service of the U.S. Department of Agriculture will be engaged as part of the nonpoint contracts to provide land use data in nonurban areas, and to interpret and provide detailed information on soil type, erodibility and so forth. The role of SCS is discussed further in Activity 220.

The first major step of the nonpoint source work is to identify and describe the water quality conditions in the designated area, with attention to those problems which are attributable to nonpoint sources as a class. Under this step, existing descriptions and identifications in such documents as the 303(e) basin plan will be expanded and refined with more detailed descriptions of more segments and considering more parameters.

The next step is to investigate potential contributors to nonpoint pollution using available data and literature. This includes identifying sources and locations, problems by source, current control techniques in use in the region, and sampling procedures by source. Categories to be investigated include urban, septic tanks, solid waste, resource extraction, construction, hydrologic modification, and agriculture and silviculture. River sludge analysis indicated in Contract K will be conducted under Contract G.

Another step is to trace the causes of such problems for selected subwatersheds or sites by direct field sampling and laboratory analysis as far as possible to the kind, location, and relative importance of actual nonpoint sources. This will provide, where possible, information for practical management decisions regarding existing conditions, and will define relationships between "sources" and "problems" in the form of coefficients for use in computer modeling or other analytical methods. It is expected that sampling will be conducted during several time periods so that coefficients can be refined as needed.

The concluding series of steps involves providing needed analytical methods and coefficients and training NCTCOG staff and assisting NCTCOG in applying the analytical methods to estimate current and future major nonpoint pollution. It is expected that the consultant will first identify available quantitative methods, their sensitivity to inputs, degree of confidence in outputs, procedures for calibration and verification, and assumptions. Coefficients will then be applied from the previous activity and the techniques will be calibrated or verified with observed results. A users package would be prepared as well. Staff assistance in their development will occur in Activity 315 while the tools will be exercised in Activities 420 and 430 with the consultant's assistance.

The following is a preliminary list of the possible analytical methods which might be needed. The actual list of major nonpoint sources will be developed by the consultant as a result of the preceding activities.

- Urban runoff

- Agricultural activities

- Construction and hydrologic modification activities

Assessments will also be performed for the following:

- Septic tank activities
- Solid waste disposal activities
- Mining activities and others

It is expected that there will be at least three contracts within G. One will be with the Soil Conservation Service for soils and rural land use data, another with the TRA for sampling and analysis, and the third with a professional consultant.

Product:

Ia. Preliminary draft working paper - assessment of existing water quality data and investigation of known and potential contributors to nonpoint pollution

Ib. Final draft working paper

IIa. Draft start-up nonpoint source sampling and analysis design

IIb. Start-up design

IIIa. Draft continuing nonpoint source sampling and analysis design

IIIb. Continuing design (and brief written memoranda recommending changes)

IV. Bi-monthly sampling documentation/analysis summary reports

V. Final sampling documentation/analysis report

VIa. Preliminary draft working paper - nonpoint sources

VIb. Final draft working paper

VII. Preliminary draft "Users Package for Assessment of Nonpoint Sources of Pollution" (including necessary draft operational procedures, operating manuals, documentation reports, manuals, analyses reports, results and summaries)

VIII. Final draft - "Users Package for Assessment of Nonpoint Sources of Pollution"

- See Activity 220 for products by Soil Conservation Service

Staffing: Supervision of these contracts will be the responsibility of the Staff Biologist of the Department of Water Resources with the involvement of the Assistant Director of Water Resources within Activity 315.

Relationship to Grant Application: This contract or set of contracts/agreements includes Tasks 2.14, 2.16, 2.17 and 2.18 and portions of Tasks 2.15, 2.19, 2.20, and 2.21 of the grant application.

CONTRACT H AUTOMATED MONITORING

Objective: To begin monitoring certain water quality parameters so as to facilitate the identification of water quality problems, measure the effect of pollution abatement activities, and provide necessary data for calibration of nonsteady-state stream models.

Previous and Ongoing Work: As part of the Trinity River Basin Water Quality Management Plan of 1974, the USGS recommended the installation of a network for automated continuous monitoring of water quality in the Trinity. The 208 Technical Subcommittee has identified the installation and operation of this system as a necessary element of the areawide planning process. Although several agencies perform "grab sampling" of water quality data as discussed in Activity 225, this data is not sufficient for the wet weather analysis required.

Scope of Work and Methodology: The United States Geological Survey (USGS) has indicated that it has a limited number of automated monitoring equipment available for use on a rented basis. Under this contract the USGS would have six permanent stations constructed at key points along the Trinity River and the automated monitoring equipment installed in them on a rented basis. The operation and maintenance of this equipment during 1976 would be funded under this contract also. During 1977 and subsequent years, it is intended that the operators participating in the 208 Technical Subcommittee would pay the cost of rental, operation and maintenance. The data results would, of course, continue to be available in the areawide planning process. As new automated monitoring equipment is developed and marketed, the rented equipment could be replaced, thus ensuring use of the latest technology.

Product:

I. Operational automated monitors

II. Quarterly documentation of the results of continuous water quality sampling (operation of monitors funded by others after 2nd report).

Staffing: Supervision of this contract is the responsibility of the Staff Biologist of the Department of Water Resources within Activity 225.

Relationship to Grant Application: This contract includes portions of Tasks 2.7, 2.15, and 2.26 of the grant application.

CONTRACT I PUBLIC INVOLVEMENT TECHNIQUES

Objective: To engage the services of one or several firms to assist the NCTCOG staff in Activity 115 at selected points in the public participation program with particular attention to innovative tasks or portions of the program requiring a third party involvement.

Previous and Ongoing Work: Under Activity 115 the previous and ongoing public participation programs of NCTCOG were described.

Scope of Work and Methodology: Selected portions of the public participation program may require professional assistance to supplement the NCTCOG staff. One potential area is the conduct of public opinion polling on water quality related issues. Such issues might include the desirability to the residents of North Central Texas of swimming and fishing in the Trinity River, or the willingness to pay for incremental improvements to water quality. A professional firm might assist in the design of questionnaires in performing the polling, and analyzing results.

Another potential area is assisting with public workshops. "Facilitators" may be hired to lead seminar discussions. Such persons are schooled in techniques of drawing out the views of participants in discussion groups and would make these sessions a more profitable part of the public participation effort.

A third potential area of assistance would be the evaluation of the effectiveness of the public participation program near the end of the 1976 cycle. Such a review by a third party would be necessary to ensure "objectivity."

The need for specific consultant help will be defined during the public participation program.

Product: Services in public involvement techniques.

Staffing: Supervision of this contract is the responsibility of the Public Information Specialist.

Relationship to Grant Application: This contract includes portions of Tasks 1.7, 4.1, and 5.1 of the grant application.

CONTRACT J LAKE RAY HUBBARD

Objective: To develop and conduct a program to assess eutrophication in Lake Ray Hubbard.

Previous and Ongoing Work: Although eutrophication studies have been conducted in other parts of the country, no such program has been developed for this portion of the State of Texas. The need for such a study was determined during the classification of water bodies in the State by the Texas Water Quality Board.

Scope of Work and Methodology: It is expected that this work will be conducted by Dallas Water Utilities of the City of Dallas with the assistance of the University of Texas at Dallas. Work under the contract will be a eutrophication study of a domestic raw water supply with emphasis on the study of algal growth and its relationship to taste and odor problems.

As part of this work, the quantity and quality of water entering and leaving Lake Ray Hubbard will be determined by flow measurement and sampling on at least weekly intervals during periods of flow with more frequent sampling during periods of stormwater runoff. A lake sampling program will also be established to determine water quality in each of the major arms of the lake. Overall mixing characteristics of the lake will be determined as well.

This data will be used to augment or extend existing mathematical models. The models will then be applied in an assessment of eutrophication in the lake. Utilizing data obtained from this work and other ongoing studies, the Dallas Water Utilities will provide a technical base which can be used to determine the potential impact of various types of land use development on water quality in the Lake Ray Hubbard watershed. Quarterly review meetings will be held with the Task Force on Stream Modeling to review the status of the work during the contract.

Product:

I. Determination of the type of model to be used

II. Model documentation report

III. Documentation of the results of the sampling program

IV. Report on eutrophication assessment program

Staffing: Supervision of this contract is the responsibility of the Staff Biologist of the Department of Water Resources within Activities 225 and 320.

Relationship to Grant Application: This contract includes the combination of Tasks 2.25 and 2.27, and a portion of Task 2.26 of the grant application.

CONTRACT K RIVER SLUDGE (To be Incorporated in Contract G)

Objective: To characterize major intermittent point sources such as river sludge in terms of location and quality.

Previous and Ongoing Work: The resuspension of river sludge in effluent dominated streams such as the Trinity River following a rise is suspected as being a major source of intermittent pollution. Generally, however bad the quality is at base flow, it is even worse in the first part of a rise produced by a rain following a period of low flow. Major events of this type, following low flow periods of several months, may result in depressed oxygen for several days, and extend all the way to Lake Livingston. The most extreme event on record, in April 1971, produced dissolved oxygen levels of 0-1 ppm all the way to Lake Livingston for about two weeks and resulted in a kill estimated conservatively at 200 tons of fish in the river just above the headwaters of Lake Livingston.

Scoe of Work and Methodology: Work performed under this contract will be closely associated with the nonpoint studies conducted in Contract G. The river sludge analysis is expected to address the following topics:

- identify sources
- chemical characteristics
- rates of deposition

- chemical changes that occur between deposition and resuspension
- oxygen uptake kinetics

Product: Documentation of river sludge study as part of products in G.

Staffing: Supervision of this contract is the responsibility of the Staff Biologist of the Department of Water Resources.

Relationship to Grant Application: This contract includes portions of Tasks 1.7, 2.7, and 2.9 of the grant application.

CONTRACT L CONTROL TECHNIQUES

Objective: To engage a professional consulting firm to assist the NCTCOG staff in Activity 415 in identifying alternative systems for waste treatment capacity and sewage service for specific target years, and to assist the staff in Activity 425 in identifying alternative structural and nonstructural management/regulatory approaches for controlling sources of pollution, whether they be "point" sources or "nonpoint" sources, and combining them into water resources management strategies.

Scope of Work and Methodology: During the 1976-77 annual cycle, a professional consulting firm will be engaged in Contract D to assist NCTCOG in updating the adopted Upper Trinity River Basin Comprehensive Sewerage Plan and analyzing the proposed facilities in light of effluent limitations and pretreatment requirements.

An initial step during the 1977-78 cycle is the identification in Activity 415 of alternative systems for waste treatment capcacity and sewage service for specific target years. In this Contract L, the consultant will provide assistance to the NCTCOG staff in the preparation of briefing documents incorporating this identification for presentation to the Areawide Planning Advisory Committee and/or appropriate subcommittees, and at public meetings. This will be an iterative process with the assessment of regional development impacts in Activity 420 and will involve the participation of the consultant performing Contract F and others.

Upon interim selection by the APAC, out of Activity 420, of one or more alternative systems and associated regional development impacts, the consultant under Contract L will assist the NCTCOG staff in Activity 425 in identifying alternative structural and nonstructural management/regulatory approaches to reducing pollutant loads caused by both point and nonpoint sources, including Best Management Practices, and in evaluating their reliability, cost and general effects. Such topics as service area delineations, five and twenty year capital improvement needs, land acquisition requirement costs based on different levels of treatment will be included as appropriate. With the involvement of the consultant under Contract F, Impact Assessment, these approaches will be combined into alternative areawide water resources management "strategies" and associated implementation programs. During the 1977-78 annual cycle, the focus will be on the swimmable/fishable and zero discharge national goals. It is expected that trade-offs will have to be made among very advanced treatment of point sources versus structural control of nonpoint sources, and structural versus management/regulatory approaches in forming these strategies with implementation programs.

The identification of strategies in Activity 425 and the assessment of their economic, social and natural resource impacts in Activity 430 will also involve the preparation of briefing documents for the review of APAC and discussion at public meetings and include participation of consultants under Contracts F and M. From this iterative process will emerge the 1978 Impact Assessment under Contract F.

Product: See briefing documents in Activity 415 describing alternative systems for waste treatment capacity and sewage service, and in Activity 425 describing alternative areawide water resources management strategies.

Staffing: Supervision of this contract is the responsibility of the Staff Engineer of the Department of Water Resources.

Relationship to Grant Application: This contract includes portions of Tasks 1.7, 2.10, 2.11, 2.12, 2.13, and 2.29 of the grant application.

CONTRACT M INSTITUTIONAL STUDY

Objective: To engage a professional consulting firm to assist the NCTCOG staff in assessing the Management and Finance Program of the Upper Trinity

River Basin Comprehensive Sewerage Plan for consistency with the requirements of Section 208(c)(2) of the Federal act, and in addressing institutional issues as necessary during the planning process.

Previous and Ongoing Work: The adopted Upper Trinity River Basin Comprehensive Sewerage Plan includes as Volume 3 a Management and Finance Program prepared in 1972. Organizational alternatives for operating treatment works were investigated for NCTCOG by Peat, Marwick, Mitchell, & Co. under EPA funding as part of the Management and Finance Program.

Eight such organizational alternatives were investigated in detail at that time. They included: (a) private corporation; (b) coordinated joint system; (c) county system; (d) coordinated joint system with regional financing; (e) centralized administration and contract operation; (f) regional single-purpose authority; (g) regional multi-purpose authority; and (g) regional multi-purpose government.

In addition to considering the advantages and disadvantages of the eight alternative organizational structures, the NCTCOG policy committee developed other organizational alternatives. Study of the various structures as they related to the current regional situation led to the selection by NCTCOG of the coordinated joint systems as the most practical method to implement the regional plan. Previous work done for EPA by Indiana University dealing with existing management agency authority by State, by H. Banks dealing with alternative institutional and financial arrangements, and by Aspar Systems Corp. dealing with Federal, State and local laws controlling nonpoint pollutants will also be used.

Scope of Work and Methodology: It should be emphasized that this contract is not intended to reevaluate the organizational arrangements for treatment works resulting from the adopted Management and Finance Program. Under this contract, a professional consulting firm with experience in management and finance would assess the Management and Finance Program for consistency with the requirements of Section 208(c)(2) of the federal act.

Under this section, the agencies designated to manage treatment works or to perform waste treatment management functions must have the authority to accept and utilize grants, incur indebtedness, assure that particpating communities pay their proportionate share of treatment costs, and several other topics. Where deficiencies are noted by the consultant, suggested remedies would be recommended.

The consultant would also assist the NCTCOG staff and other participating consultants in addressing specific institutional issues as they arise during the planning process through memoranda concerning draft legistion, institutional arrangements, interagency agreements, and so forth.

Product: 1. Review of existing management agency authorities versus Section 208(c)(2).

- Memoranda on institutional issues.

Staffing: Supervision of this contract si the responsibility of the Director of Water Resources.

Relationship to Grant Application: This contract includes Tasks 3.3 and 3.4 of the grant application.

IV. The Resource Program

The Grant...

Effective July 1, 1975, NCTCOG received a grant from the U.S. Environmental Protection Agency to conduct the areawide water quality management planning process during the 1975-1977 period. The grant is for $2,321,000, to be disbursed to NCTCOG as work tasks are accomplished. This amount was determined based on an allocation formula developed nationally and regionally by EPA, and the NCTCOG grant application of March, 1975.

The final Section 208 regulations published in November, 1975, extends the allowable grant period through approval by the EPA Regional Administrator of the annual plan addressing all Section 208 requirements. As indicated in the first chapter, the allowable grant period will extend over a longer period than the original 24 months and is budgeted to extend through June 30, 1978.

After this initial 100% multiyear grant, NCTCOG will be eligible to receive annual grants from EPA to cover 75% of the cost of conducting the planning process.

The Overall Budget...

The grant application included a breakdown of the overall $2,321,000 budget by NCTCOG staff, contract services, State coordination and administration, and support costs such as computers, reproduction, and so forth. Because of the extension of the allowable grant period as discussed earlier, the distribution of the overall budget has been modified and a request for an amendment to the grant has been submitted to EPA. The revised overall budget is as follows:

NCTCOG Salaries & Fringe	666,605
Interagency Agreements	610,000
Professional Consultant Services	637,000
Support (Indirect costs, computer, reproduction, etc.)	407,395
TOTAL	$2,321,000

The Staff...

Since July of 1975, the basic staff necessary to serve the APAC in the development and operation of the continuing areawide planning process has been retained. The staff as of June, 1976 includes:

Within the Department of Water Resources:

Director of Water Resources	Herman J. Veselka
Assistant Director	John Promise
Staff Engineer	Jerry Ragsdale
Staff Biologist	Charles Bayer
Solid Waste Planner	Charles Jordan
Senior Secretary	Carol Frisby
Senior Secretary	Nancy Watson
Administrative Assistant	Bobby Mitchell
Planner/Engineer	Hiring

Within the Department of Public Affairs:

Public Information Specialist	Hiring

Within the Department of Management and Planning Coordination:

Systems Analyst	John Principe
Assistant Demographer	Martha Nungesser
Draftsman	Aly Knox
Urban Planner	Hal Jennings
Data Analyst	Don Myers

Other authorized positions to be filled during the coming months include a Planner/Engineer and a Research Assistant/Secretary within the Department of Water Resources, and a Data Analyst within the Department of Management and Planning Coordination.

Contract Services...

The preceding chapter identified Contracts A through M which will be required to assist in the conduct of the continuing planning process and the preparation of the annual plans. The percent of the total contract services budget of $1,247,000 for each contract, rounded off, is shown on the next page. The actual amount will be negotiated for each contract based on a detailed scope of services.

Contract Number	Description	Tentative Contractor	Total % of Contract Services*
A	State Coordination & Administration	TWQB	6%
B	State Modeling	TWQB	2%
C	Model Sampling	TRA	3%
D	Point Source Analysis	Consultant	12%
E	Statewide Management Study (Cancelled)		
F	Impact Assessment of Alternatives	Consultant	18%
G	Nonpoint Source Studies	SCS, TRA, & Consultant	28%
H	Automated Monitoring	USGS	9%
I	Public Involvement Techniques	Consultant	2%
J	Lake Ray Hubbard Study	City of Dallas & UTD	9%
K	Study of River Sludge (Within Contract G)		
L	Control Techniques	Consultant	9%
M	Institutional Study	Consultant	2%
	TOTAL		100%

*Rounded Off

Consultant Selection...

The Management Planning Subcommittee of the APAC has been assigned the responsibility of reviewing and selecting consultants and agencies to perform Contracts A through M.

The Water Quality Council approved in September, 1975, and the APAC reaffirmed in December, 1975, the processes to procure contract services of the following three types:

1. Professional services for the NCTCOG "208" area;
2. Interagency agreements with public agencies (sole-source services); and
3. Professional services statewide (cancelled).

Copies of these procedures have been submitted to the TWQB and EPA and are indicated in Figures IV-1 and IV-2. It is expected professional services for Contracts D, F, L, M, and portions of G will be obtained using the procurement process illustrated in Figure IV-1. Contracts A, B, C, H, J, K and portions of G will be interagency agreements with public agencies using the procedures in Figure IV-2. Contract I will include several small purchases of services under $10,000 each and procurement available from only one person or entity. Therefore, it will not undergo the process in Figure IV-1, although reasonable competition will be obtained for small purchases.

The Procurement of Professional Services process is based on procedures recommended by the American Institute of Planners (AIP), American Society of Consulting Planners (ASCP), American Society of Civil Engineers (ASCE), and the Environmental Protection Agency. Justification for procurement by negotiation is pursuant to Title 40 CFR 35.937.

Support...

Support costs are those items to be charged directly to the Section 208 grant and are exclusive of charges contained within "indirect costs" under the staff category. For example, rent under "indirect costs" applies only to personnel being charged into the indirect cost and common facilities utilized by all departments within NCTCOG. Rent in the 208 budget is for space occupied by staff personnel actually working on the 208 program and paid directly out of the 208 budget.

Line items under support costs include rent, telephone, equipment, supplies, computer services, travel, equipment maintenance, postage, employee development and recruitment, publication, subscriptions, and meeting rental.

Contributed Services...

Not reflected in the Section 208 budget but a vital part of the continuing planning program are the contributed services of the local governments and agencies who are represented on the APAC and its subcommittees. The continued involvement of these persons in regular meetings, workshops, and individual discussions makes the planning process work.

FIGURE IV-1

PROCUREMENT OF PROFESSIONAL SERVICES FOR NCTCOG "208" AREA

ADVERTISE	STEP 1
▼	
LETTERS OF INTEREST	STEP 2
▼	
STATEMENT OF QUALIFICATIONS	STEP 3
▼	
MANAGEMENT PLANNING SUBCOMMITTEE SELECTS MOST QUALIFIED (3)	STEP 4
▼	
CONSULTANTS PREPARE WORK PROGRAMS FROM RFP	STEP 5
▼	
MANAGEMENT PLANNING SUBCOMMITTEE INTERVIEWS MOST QUALIFIED CONSULTANTS	STEP 6
▼	
RANKING OF CONSULTANTS	STEP 7
▼	
NEGOTIATION OF CONTRACT AND FEE WITH TOP RANK	STEP 8
▼	
MANAGEMENT PLANNING SUBCOMMITTEE APPROVAL	STEP 9
▼	
APAC APPROVAL	STEP 10
▼	
EXECUTIVE BOARD APPROVAL	STEP 11
▼	
TWQB REVIEW	STEP 12
▼	
EPA APPROVAL	STEP 13

FIGURE IV-2

INTERAGENCY AGREEMENT

DEVELOP WORK PLAN	STEP 1
▼	
NEGOTIATION OF CONTRACT AND FEE	STEP 2
▼	
MANAGEMENT PLANNING SUBCOMMITTEE APPROVAL	STEP 3
▼	
APAC APPROVAL	STEP 4
▼	
EXECUTIVE BOARD APPROVAL	STEP 5
▼	
TWQB REVIEW	STEP 6
▼	
EPA APPROVAL	STEP 7

Response Sheet

Please use this sheet for your comments on:

CHAPTER I - THE CONTINUING PLANNING PROCESS

Return WHAT IS OUR WATER WORTH? comments to: Herman Veselka, Director of Water Resources,
North Central Texas Council of Governments, P.O. Drawer COG, Arlington, Texas 76011
Phone: 817/640-3300

1 of 4 Pages

Response Sheet

Please use this sheet for your comments on:

CHAPTER II -- THE ANNUAL PLAN

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Phone: 817/640-3300

Response Sheet

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CHAPTER III - THE WORK PROGRAM

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North Central Texas Council of Governments, P.O. Drawer COG, Arlington, Texas 76011
Phone: 817/640-3300

Response Sheet

Please use this sheet for your comments on:

CHAPTER III - THE WORK PROGRAM (Continued)
CHAPTER IV - THE RESOURCE PROGRAM

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